US010659865B2

(12) **United States Patent**
**Royer**

(10) **Patent No.: US 10,659,865 B2**
(45) **Date of Patent: May 19, 2020**

(54) **HEADSET AND METHOD FOR AUTOMATIC REDUCTION OF EAR PRESSURE AND BAROTRAUMA**


(71) Applicant: **Brianna Marie Royer**, Frisco, TX (US)

(72) Inventor: **Brianna Marie Royer**, Frisco, TX (US)


( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.


(21) Appl. No.: **15/981,552**

(22) Filed: **May 16, 2018**

(65) **Prior Publication Data**

US 2018/0338198 A1 Nov. 22, 2018

**Related U.S. Application Data**

(60) Provisional application No. 62/506,827, filed on May 16, 2017.

(51) **Int. Cl.**
***H04R 1/10*** (2006.01)

(52) **U.S. Cl.**
CPC ......... ***H04R 1/1041*** (2013.01); *H04R 1/1008* (2013.01); *H04R 2420/09* (2013.01)

(58) **Field of Classification Search**
CPC ................ H04R 1/1041; H04R 1/1008; H04R 2420/09; A61B 5/12
USPC ............................................................ 381/74
See application file for complete search history.



(56) **References Cited**

U.S. PATENT DOCUMENTS

4,688,582 A 8/1987 Heller et al.
5,819,745 A 10/1998 Mobley et al.
8,199,955 B2 6/2012 Akino
8,625,833 B1 1/2014 Armwood
2010/0296682 A1* 11/2010 Palmer .................... A61F 11/06 381/332
2012/0057734 A1 3/2012 Ambrose et al.
2015/0092971 A1 4/2015 Kim
2015/0264472 A1 9/2015 Aase

FOREIGN PATENT DOCUMENTS

CN 103079137 1/2013
CN 203027439 1/2013

OTHER PUBLICATIONS

Arduino Tutorial "Digital Pins." Available at: https://www.arduino.cc/en/Tutorial/DigitalPins; Accessed on Jul. 20, 2018.

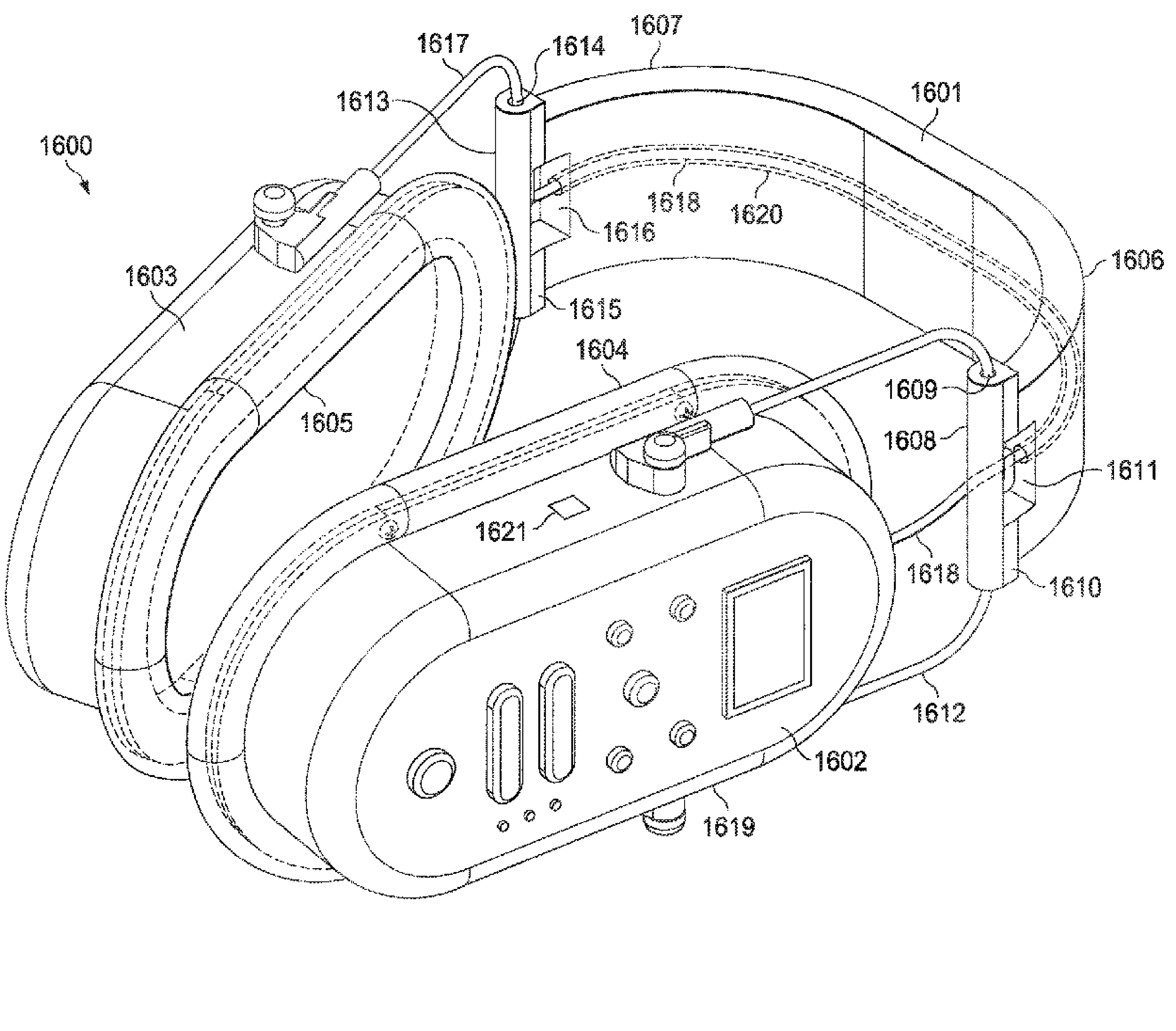
(Continued)


*Primary Examiner* — Vivian C Chin
*Assistant Examiner* — Douglas J Suthers

(57) **ABSTRACT**


A headset and method for controlling pressure in the ears of a user is disclosed. The headset includes a headband, a control earpiece connected to the headband, an earpiece connected to the headband, and a control system housed in the control earpiece and the earpiece to manually and/or automatically control the pressure in each of the control earpiece and the earpiece. In one embodiment, the pressure in each of the control earpiece and the earpiece is manually controlled by increasing and/or decreasing the pressure in each of the control earpiece and the earpiece. In another embodiment, the pressure in each of the control earpiece and the earpiece is automatically adjusted in a ground pressure mode, an ascent mode, and/or a descent mode.


**5 Claims, 29 Drawing Sheets**



(56) **References Cited**

OTHER PUBLICATIONS

Mjlorton, Arduino Tutorial #1—Getting Started and Connected!, YouTube, Jul. 9, 2012. Available at: https://www.youtube.com/watch?v=kLd_JyvKV4Y; Accessed on Jan. 27, 2017.
Harvard Health Online, Barotrauma, Harvard Medical School, Oct. 2012, Harvard Health Publishing. Available at: https://www.health.harvard.edu/diseases-and-conditions/barotrauma.
Brandon G. Bentz, M.D. and C. Anthony Hughes, M.D., Barotrauma, American Hearing Research Foundation, Oct. 2012. Available at: https://www.american-hearing.org/disorders/barotrauma/.
Cedars-Sinai, Ear Barotrauma. Available at: https://www.cedars-sinai.org/health-library/diseases-and-conditions/e/ear-barotrauma.html; Accessed on Jul. 20, 2018.
Gadget Junkie, Equalizers—Pressure Equalizing Earbuds. Available at: http://www.gadgetify.com/equalizers-pressure-equalizing-earbuds/; Accessed on Jul. 20, 2018.
Formlabs, Guide to Painting 3D Printed Parts: Priming, Formlabs. Available at: https://formlabs.com/blog/priming-3d-printed-parts/; Accessed on Jan. 27, 2017.
Discovery/Science Channel, "How It's Made" Headphones, YouTube, Dec. 29, 2009. Available at: https://www.youtube.com/watch?v=3LbsQRaQD6A.
Curiousinventor, How to Solder Electronics, YouTube, May 25, 2015. Available at: https://www.youtube.com/watch?v=lpkkfK937mU; Accessed on Jan. 27, 2017.
Mayo Clinic, Airplane Ear. Available at: https://www.mayoclinic.org/diseases-conditions/airplane-ear/symptoms-causes/syc-20351701; Accessed on Jul. 20, 2018.
Dave Evans, Ultimate Guide to Finishing 3D Printed Parts, Fictiv—Hardware Guide, Fictiv Inc., Jan. 28, 2015. Available at: https://hwg.fictiv.com/fabricate/ultimate-guide-to-finishing-3d-printed-parts; Accessed on Jan. 27, 2017.
Formlabs, The Ultimate Guide to Painting 3D Printed Parts, Formlabs. Available at: https://formlabs.com/blog/painting-3d-printed-parts; Accessed on Jan. 27, 2017.
TR Industrial Schutz Compact Foldable Ear Muffs with Soft Adjustable Headband, NRR=34dB, CE Approved, ANSI S12.42/S3.19, Yellow, Black, Cookware Canada product page. Available at: http://www.cookwarecanada.ca/tr-industrial-schutz-compact-foldable-ear-muffs-with-soft-adjustable-headband-nrr-34db-ce-approved-ansi-s12-42-s3-19-yellow-black/; Accessed on Jul. 20, 2018.
Stansport Plastic Bellows Foot Pump, Amazon product page. Available at: https://www.amazon.com/Stansport-Plastic-Bellows-Foot-Pump/dp/B000PTKQDM; Accessed on Jul. 20, 2018.
Desxz B570 LCD Display Screen Foldable 3.5MM wired Wireless Stereo Bluetooth Headphone Handsfree with Mic FM Radio TF Card Slot, Amazon product page. Available at: https://www.amazon.com/Desxz-Foldable-Bluetooth-Headphone-Handsfree/dp/B01E02B3TK; Accessed on Jul. 20, 2018.
Bluetooth Headphones With Different Colors Screen, Mercado Libre product page. Available at: https://articulo.mercadolibre.com.co/MCO-455333032-audifonos-bluetooth-con-pantalla-diferentes-colores-_JM; Accessed on Jul. 20, 2018.
Barometric Pressure Tinyshield, TinyCircuits product page. Available at: https://tinycircuits.com/products/barometric-pressure-tinyshield; Accessed on: Jul. 20, 2018.
Board Mount Pressure Sensor, BMP280 by Bosch, Arrow product page. Available at: https://www.arrow.com/en/products/bmp280/bosch?utm_source=google&utm_campaign=g-shp-us-sensors&utm_medium=cpc&utm_term=PRODUCT+GROUP&gclid=EAlalQobChMI6rHRn66r3AlV27XACh0J6AOAEAQYAyABEgKa-mfD_BwE&gclsrc=aw.ds&dclid=CLX9vKGuq9wCFQy_wAod2WUKyg; Accessed on: Jul. 20, 2018.
Design House 3½ in. × 3½ in.-⅝ in. Radius Satin Nickel Corner Door Hinge-202481, The Home Depot product page. Available at: https://www.homedepot.com/p/Design-House-3-1-2-in-x-3-1-2-in-5-8-in-Radius-Satin-Nickel-Corner-Door-Hinge-202481/203447341; Accessed on Jul. 20, 2018.
Dismantling Technics RP-DH1200, CustomCans.co.uk Custom Headphone Blog, Feb. 12, 2019. Available at: https://www.customcans.co.uk/blog/?p=126.
Download Parts of a Door Hinge, Fresh Furniture. Available at: http://architects-rock.com/parts-of-a-door-hinge/parts-of-a-door-hinge-projects-ideas-2-the-original-adjustable-door-hinge-sticking-door/; Accessed on Jul. 20, 2018.
Dual Motor Tinyshield, TinyCircuits product page. Available at: https://tinycircuits.com/products/dual-motor-tinyshield; Accessed on Jul. 20, 2018.
Peltor Protectors Junior Pink Earmuff, Patriot Outfitters product page. Available at: http://www.patriotoutfitters.com/Workwear_2/Work-Clothes-Hearing-Protection_2/; Accessed on Jul. 20, 2018.
Stainless Steel Marine Heavy Duty Strap Hinges 4" or 6", Hinge Outlet product page. Available at: https://www.hingeoutlet.com/products/s3820-0100; Accessed on Jul. 20, 2018.
Tiny Battery Charger, TinyCircuits product page. Available at: https://tinycircuits.com/products/tiny-battery-charger; Accessed on Jul. 20, 2018.
TinyDuino Processor Board, TinyCircuits product page. Available at: https://tinycircuits.com/products/tinyduino-processor-board; Accessed on Jul. 20, 2018.
TinyScreen OLED TinyShield, TinyCircuits produt page. Available at: https://tinycircuits.com/products/tinyscreen; Accessed on Jul. 20, 2018.
https://www.adafruit.com/?gclid=EAIalQobChMlueedm-MOk3AIVTrjACh1JFA1wEAAYASAAEgL7N_D_BwE; Accessed on Jul. 20, 2018.
International Preliminary Report on Patentability for International Application No. PCT/US2018/033012 dated Nov. 28, 2019.

* cited by examiner

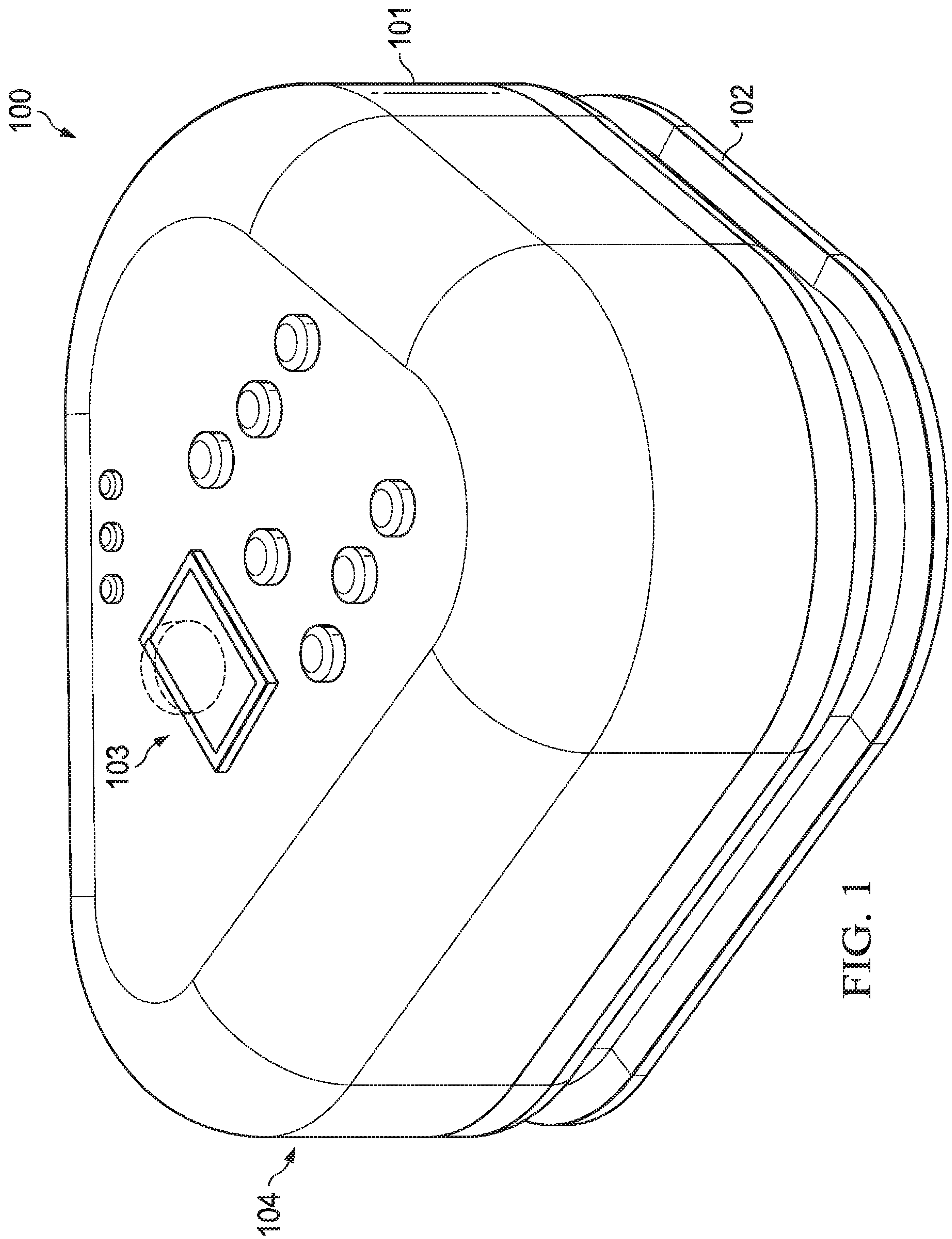



FIG. 1

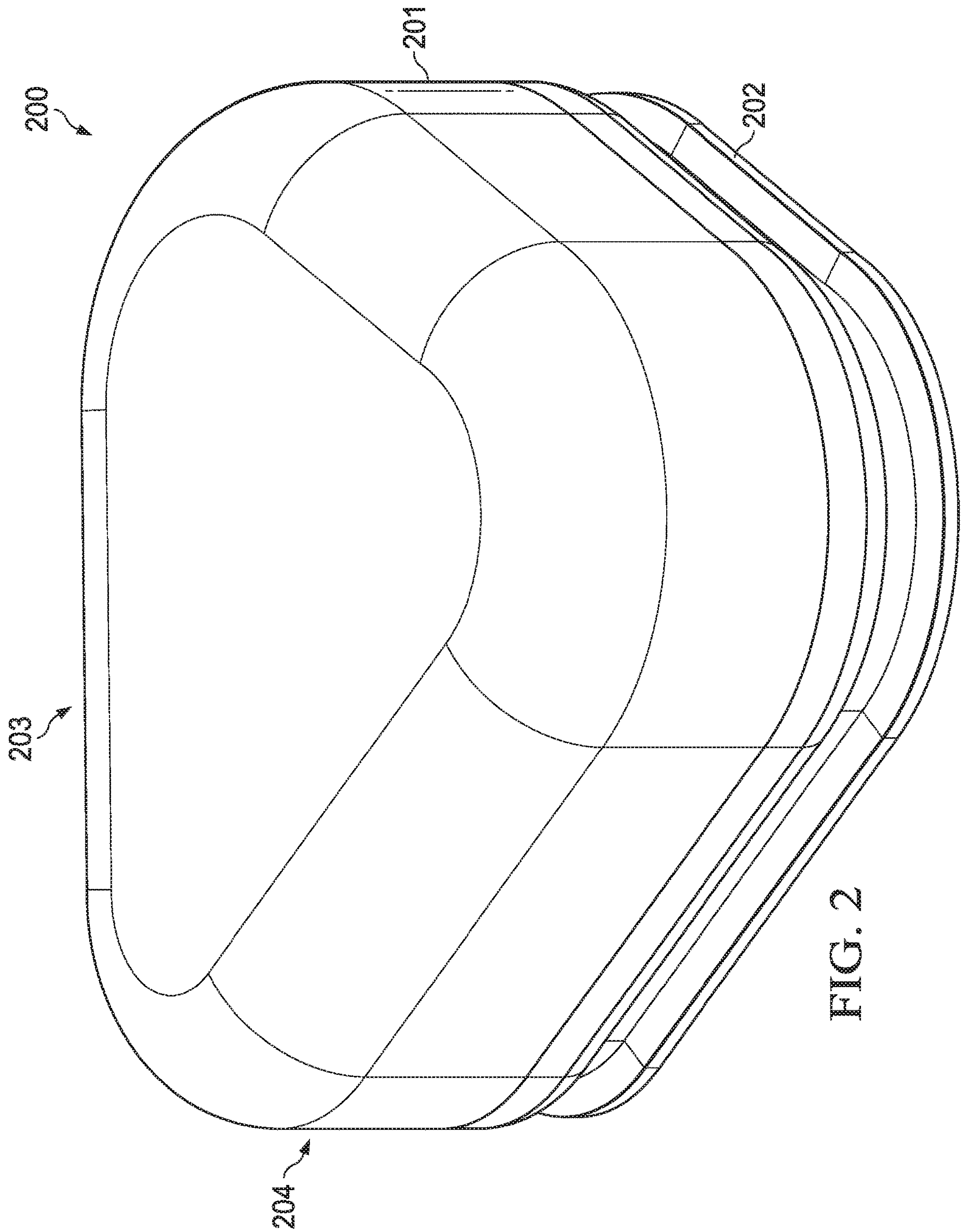



FIG. 2

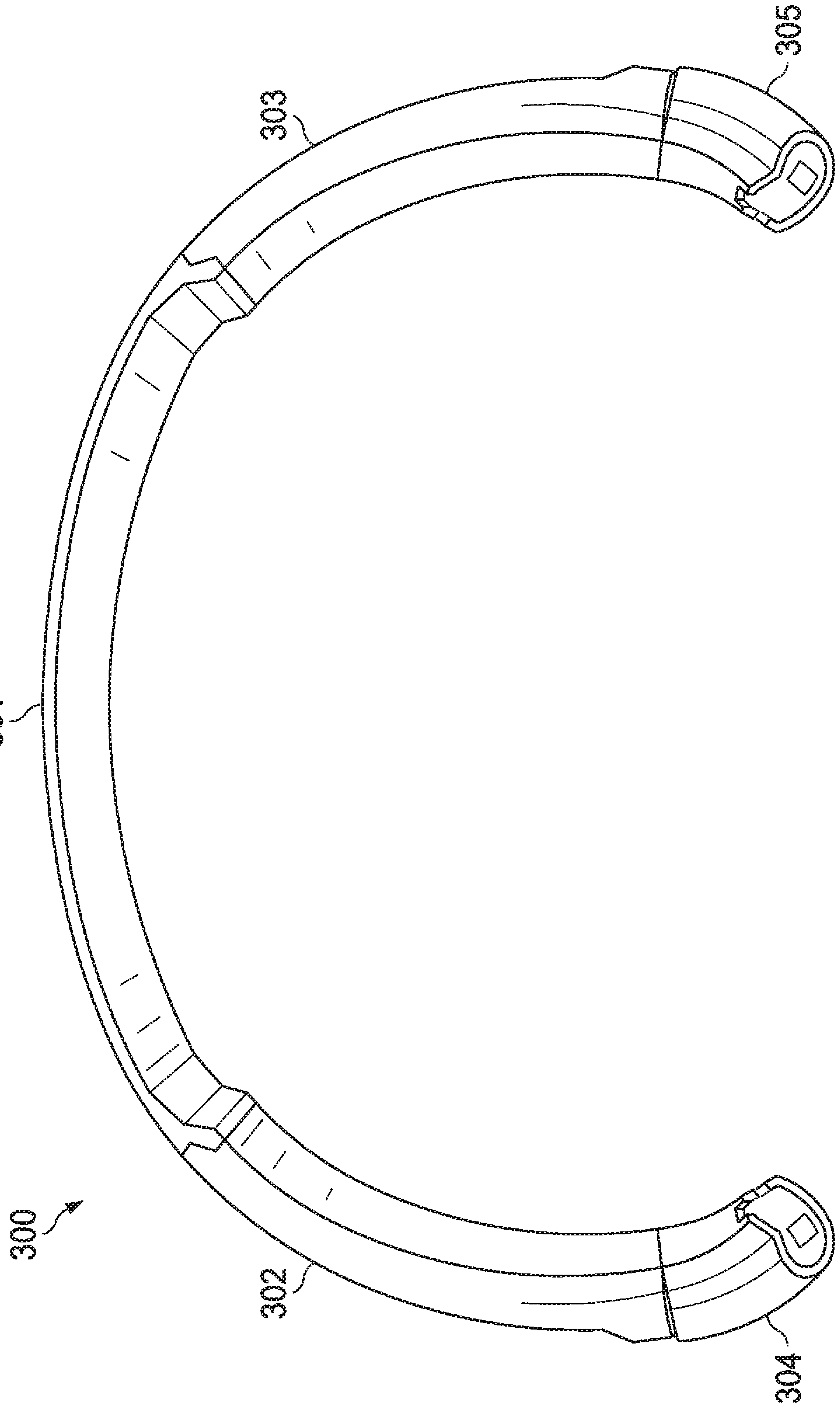



FIG. 3

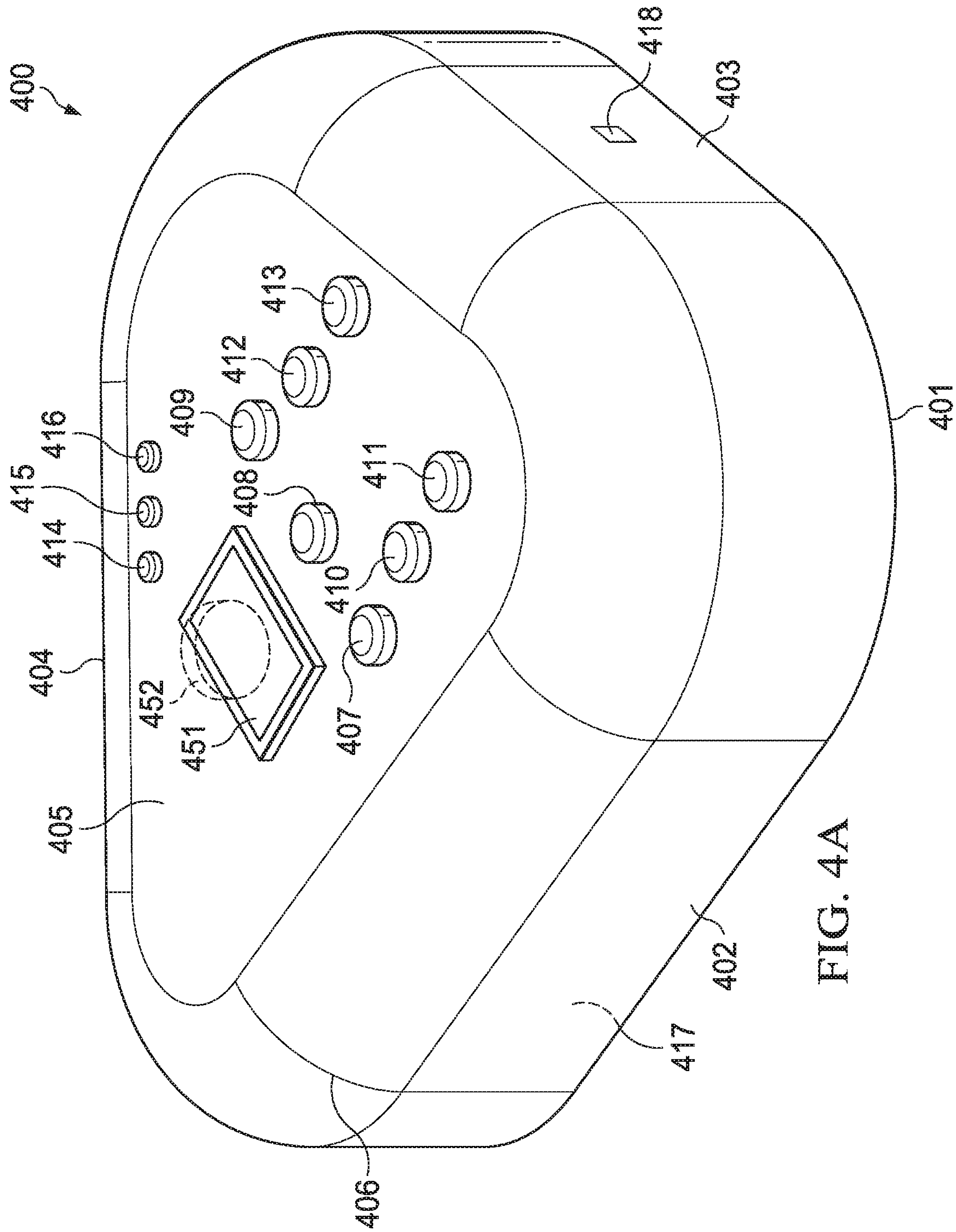

400
418
403
401
402
417
406
405
404
451
452
407
410
408
411
409
412
413
414
415
416

FIG. 4A

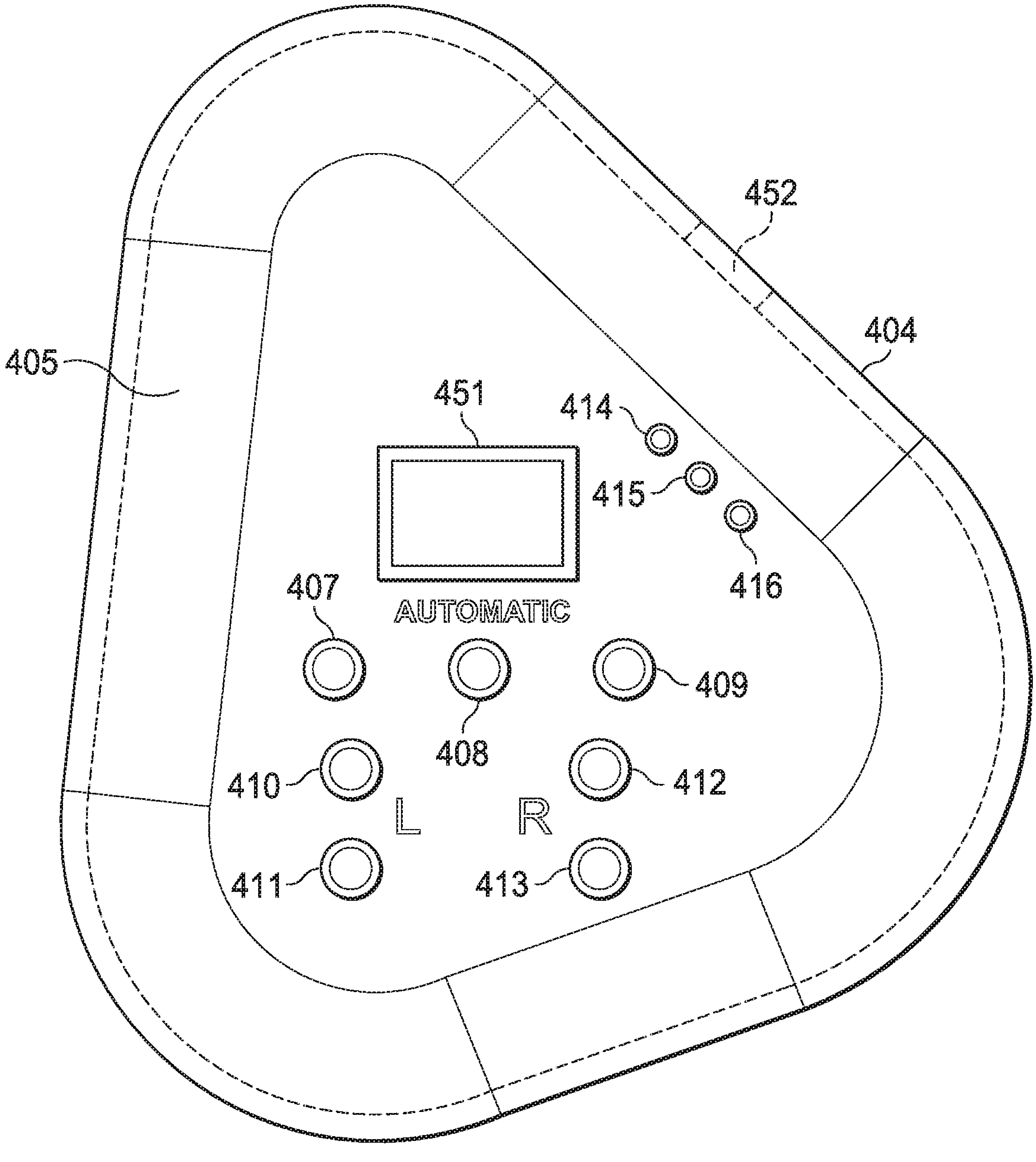

452
404
405
451
414
415
416
407
AUTOMATIC
409
408
410
412
L
R
411
413

FIG. 4B

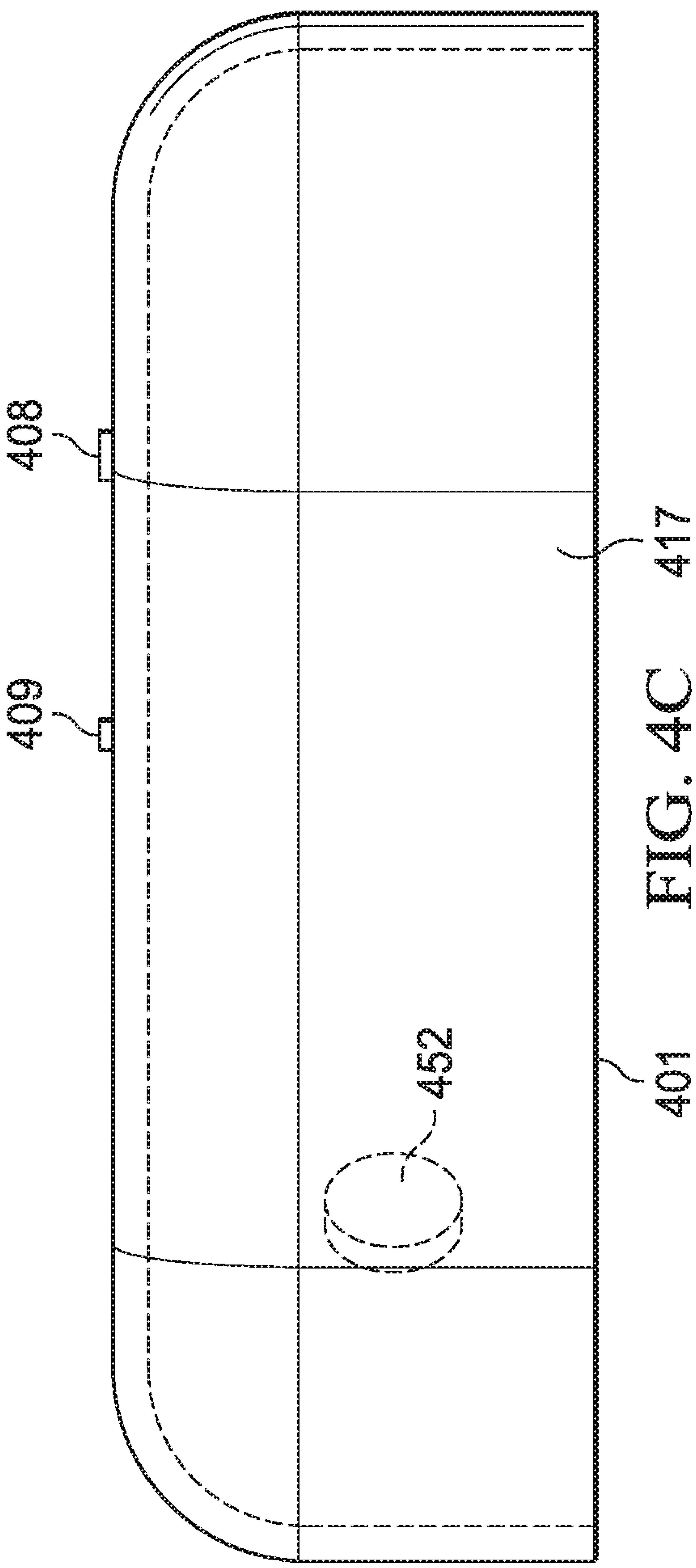



FIG. 4C

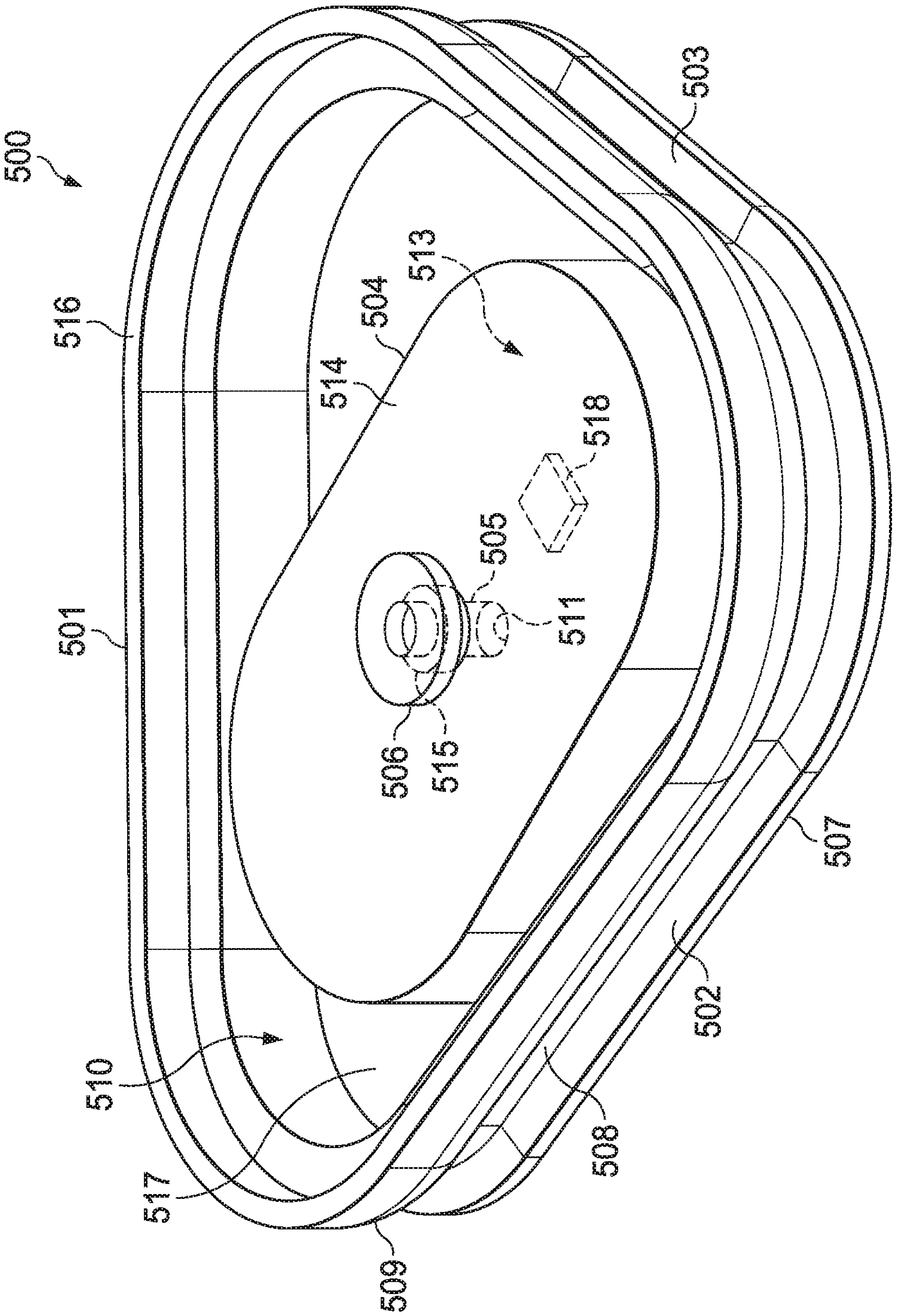

500
516
501
510
517
509
504
513
514
518
505
511
506
515
503
507
502
508

FIG. 5A

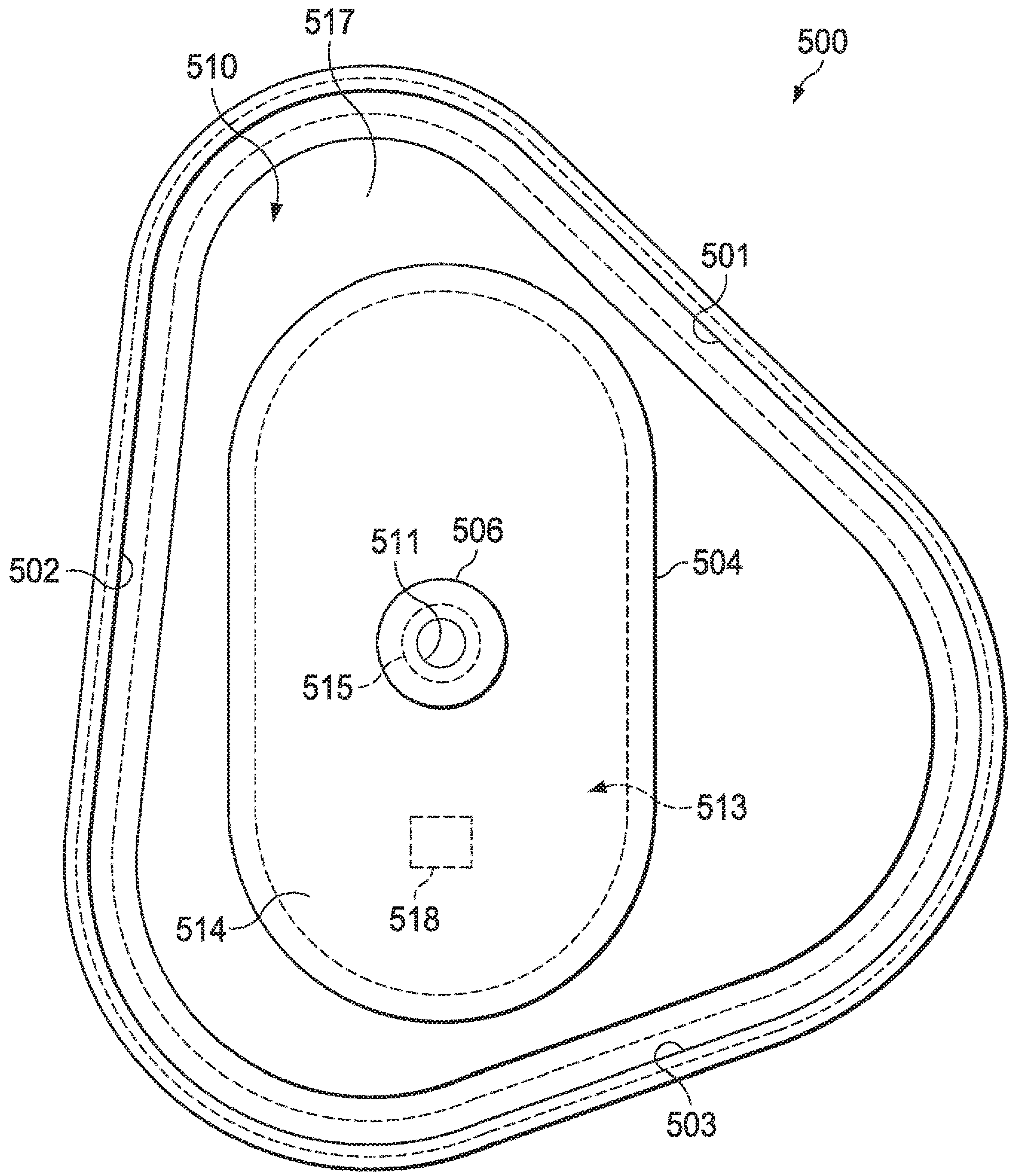

500
517
510
501
502
511
506
504
515
513
514
518
503

FIG. 5B

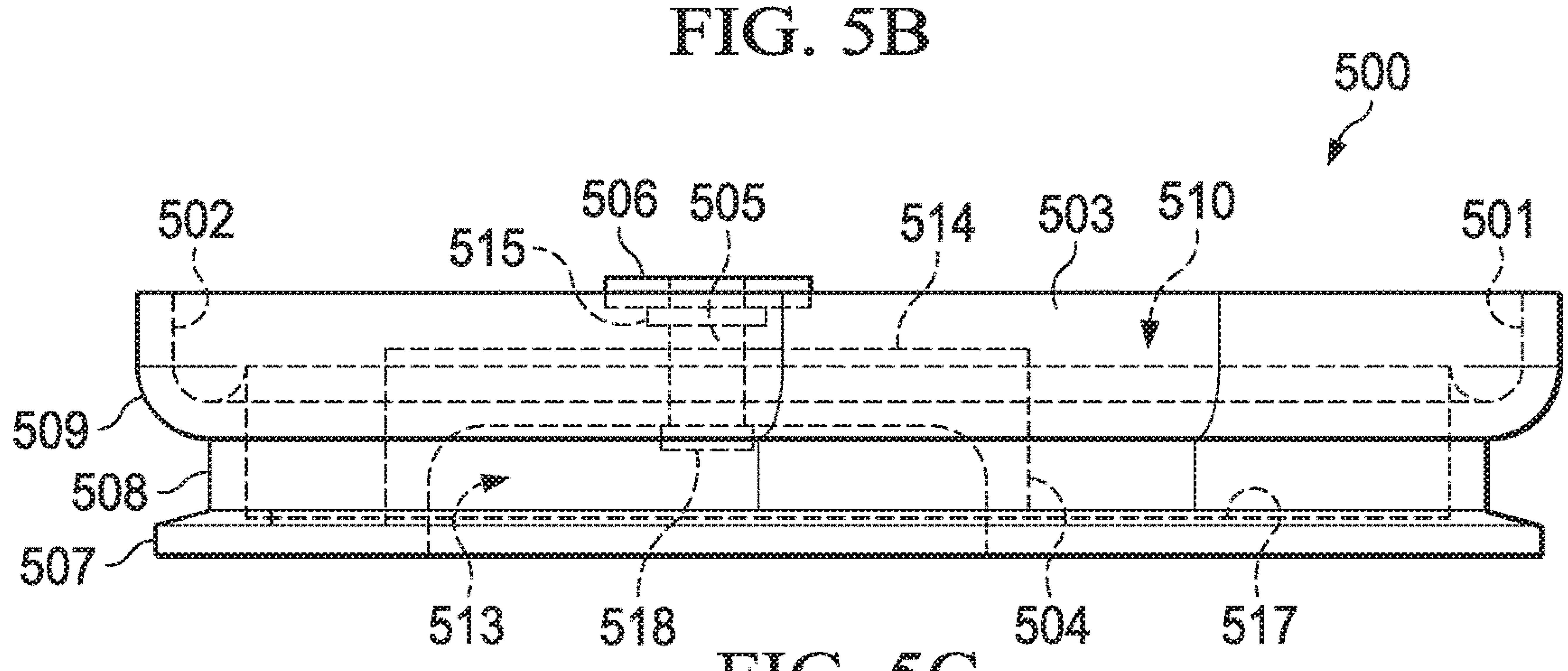
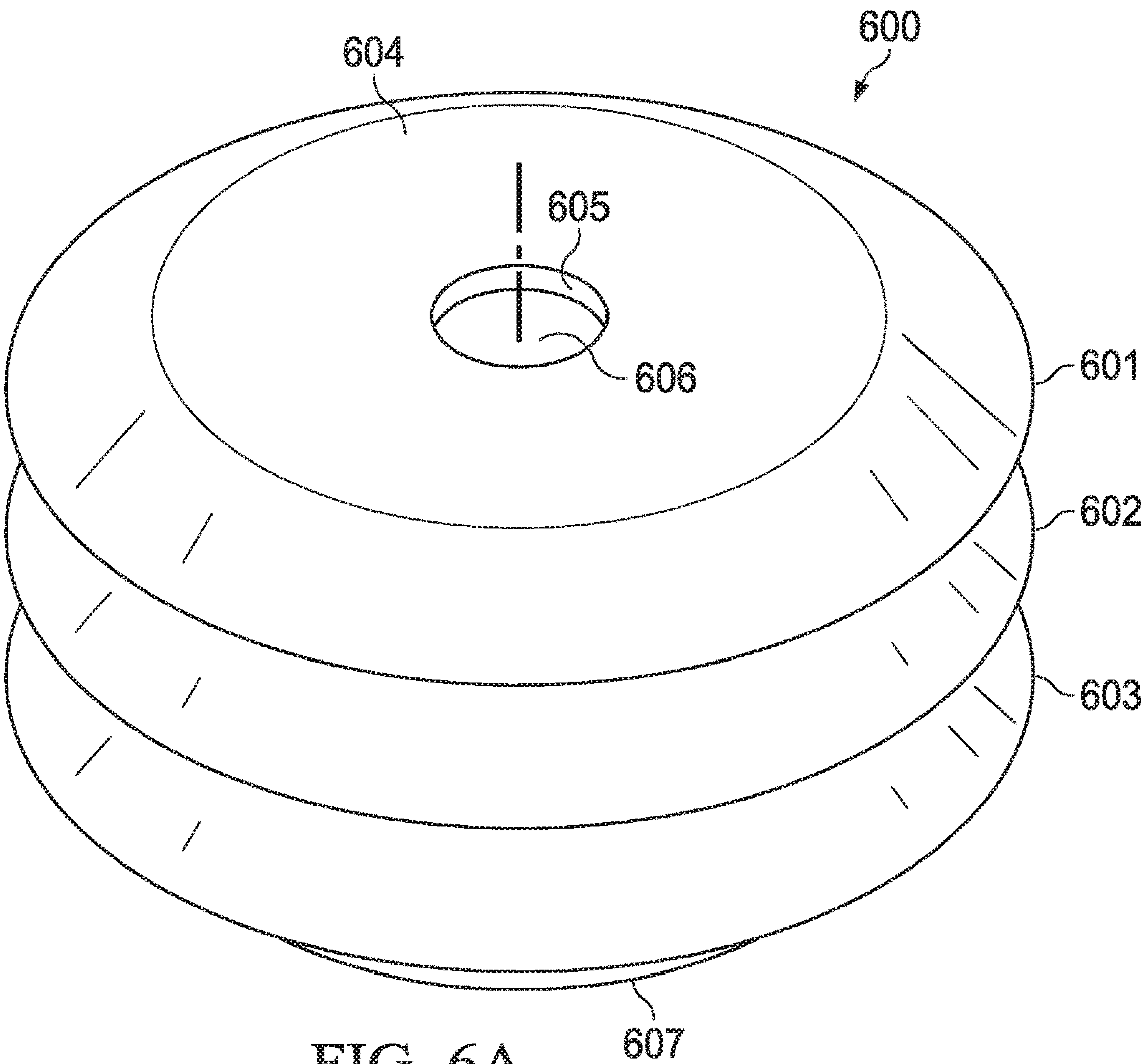
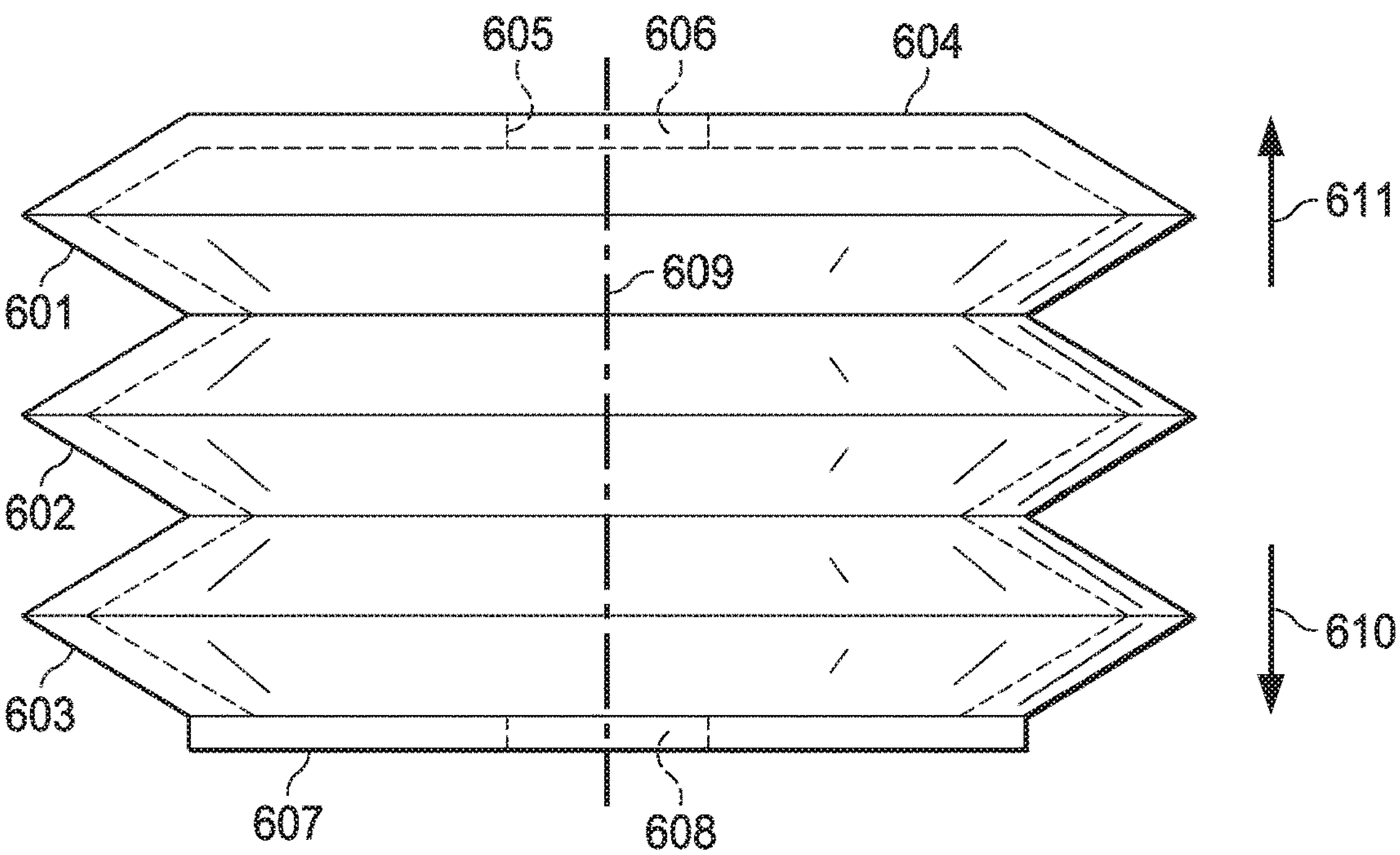

500
502
506
505
515
514
503
510
501
509
508
507
513
518
504
517

FIG. 5C


600
604
605
606
601
602
603
607
FIG. 6A


605
606
604
611
601
609
602
603
610
607
608
FIG. 6B

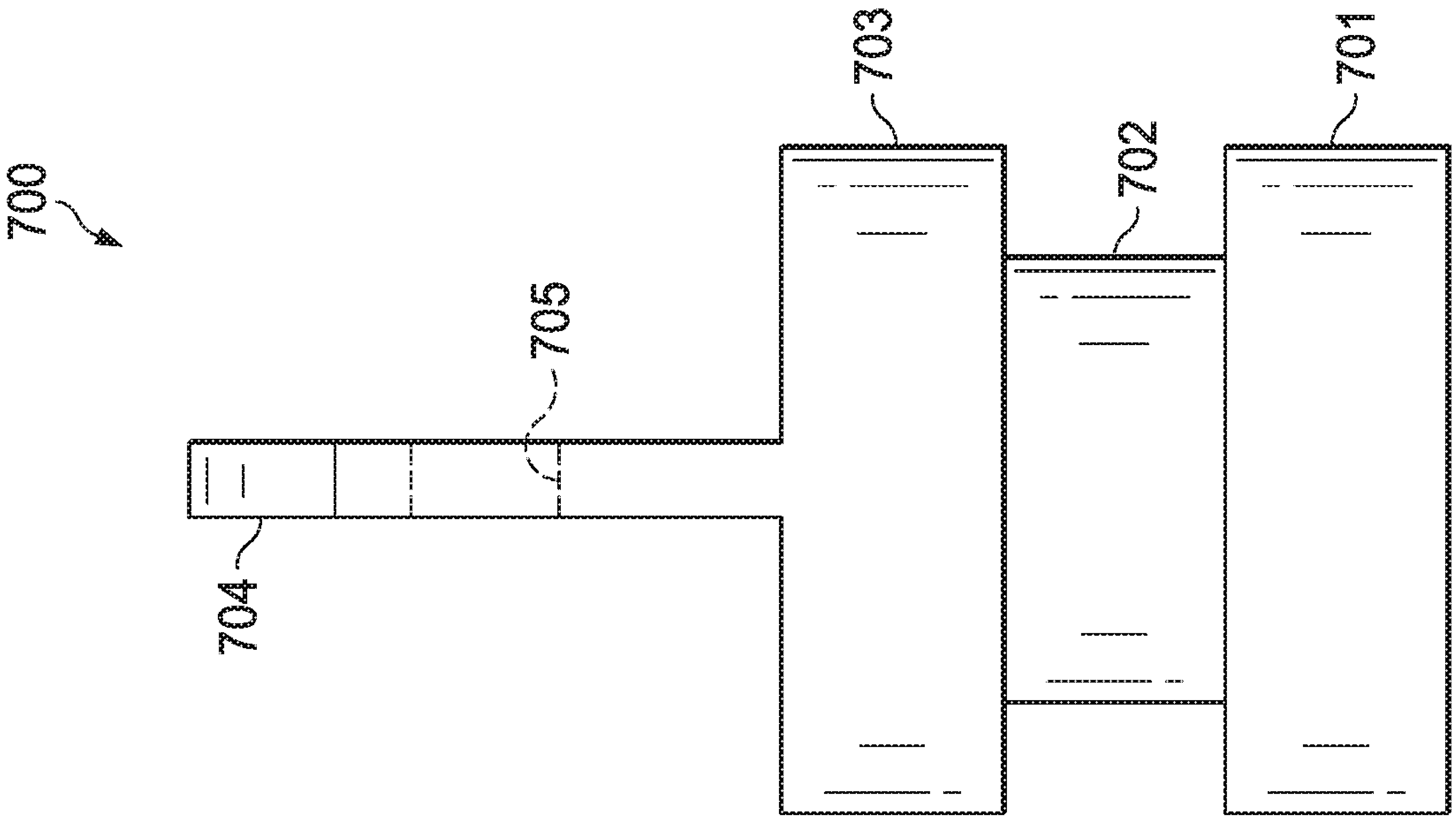



FIG. 7B

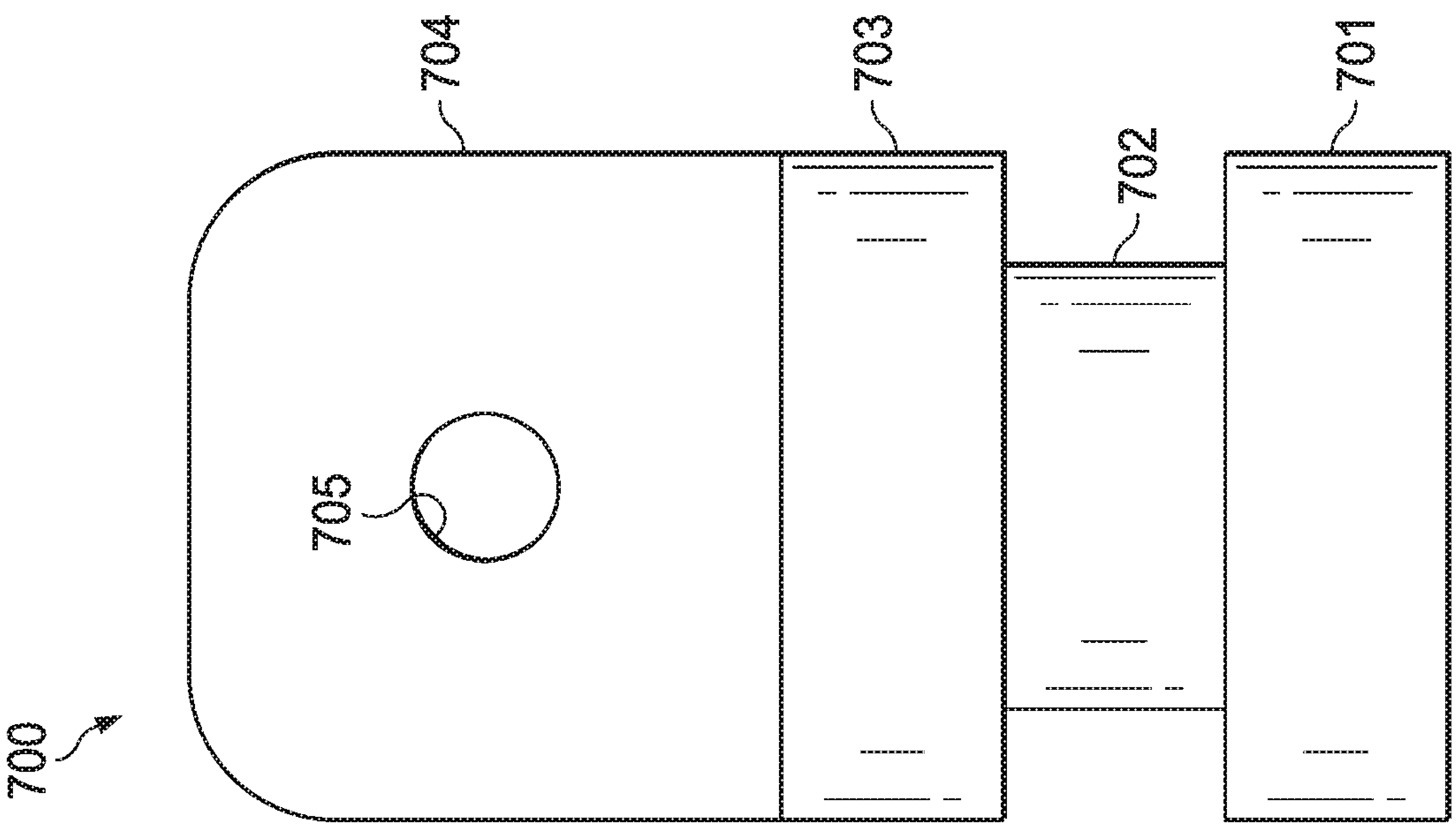



FIG. 7A

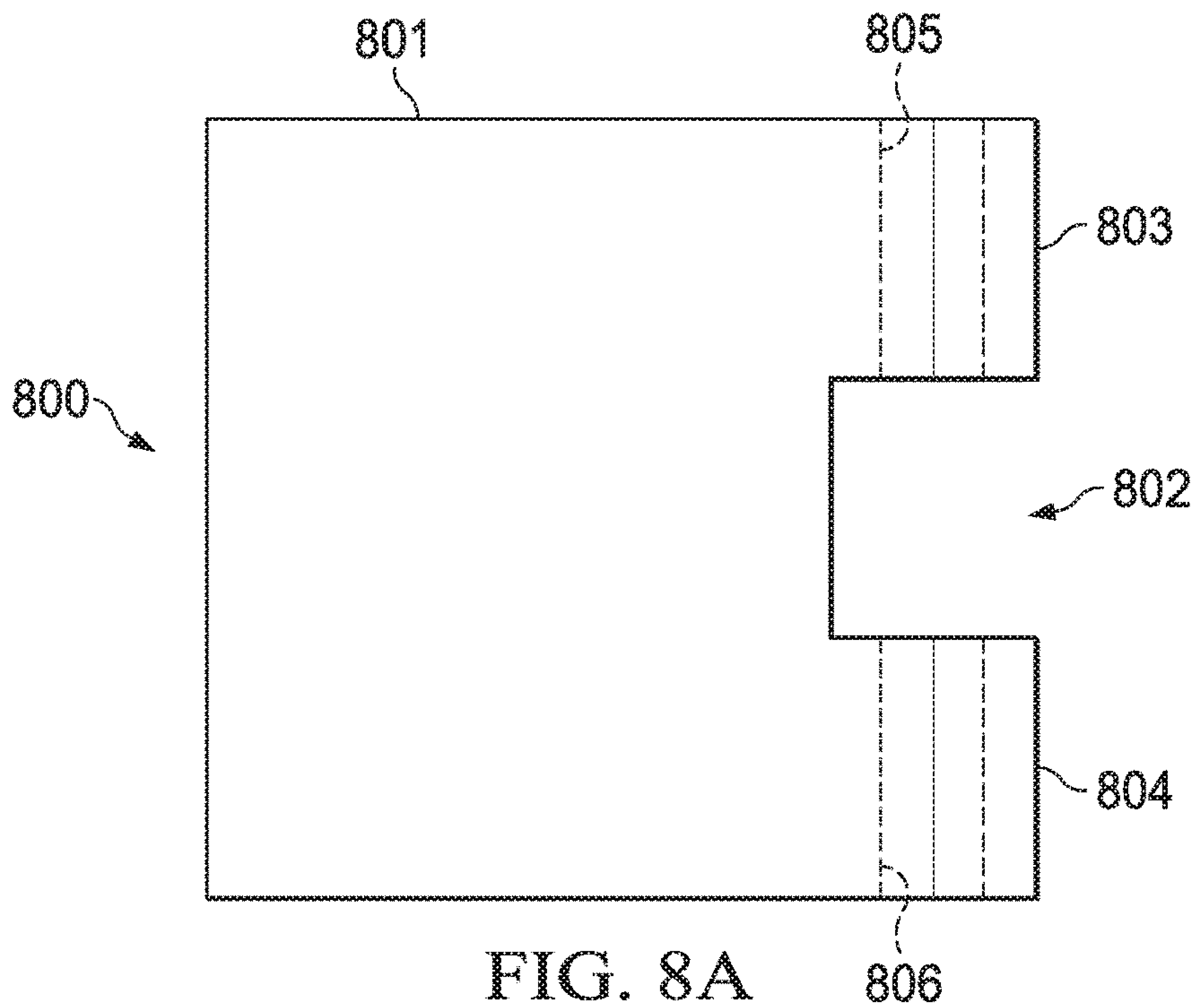



FIG. 8A

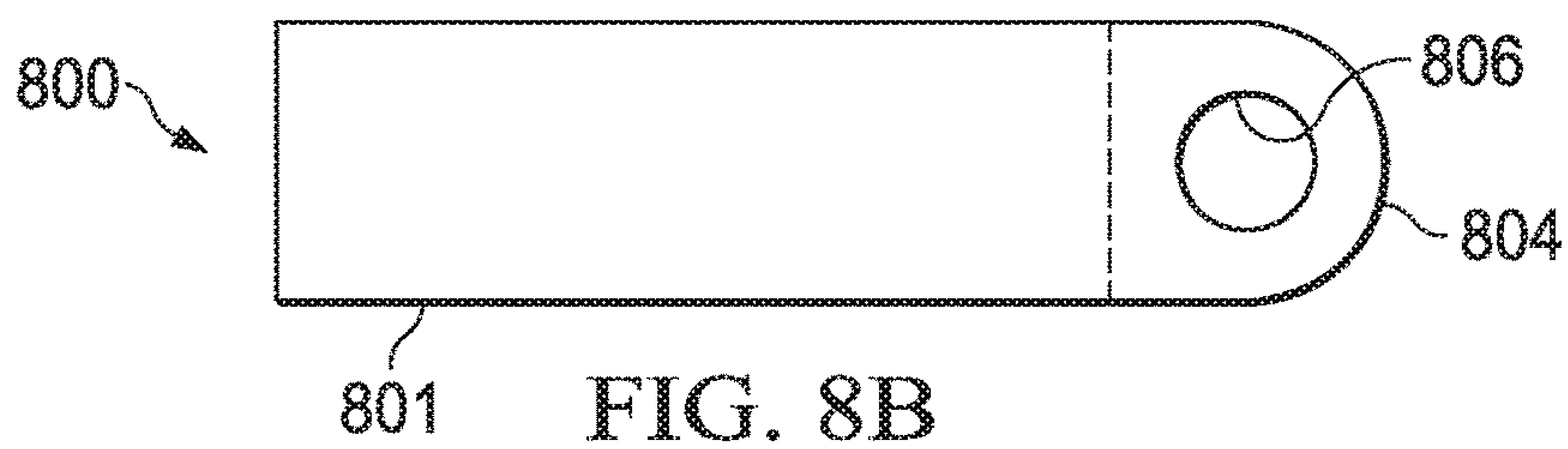



FIG. 8B

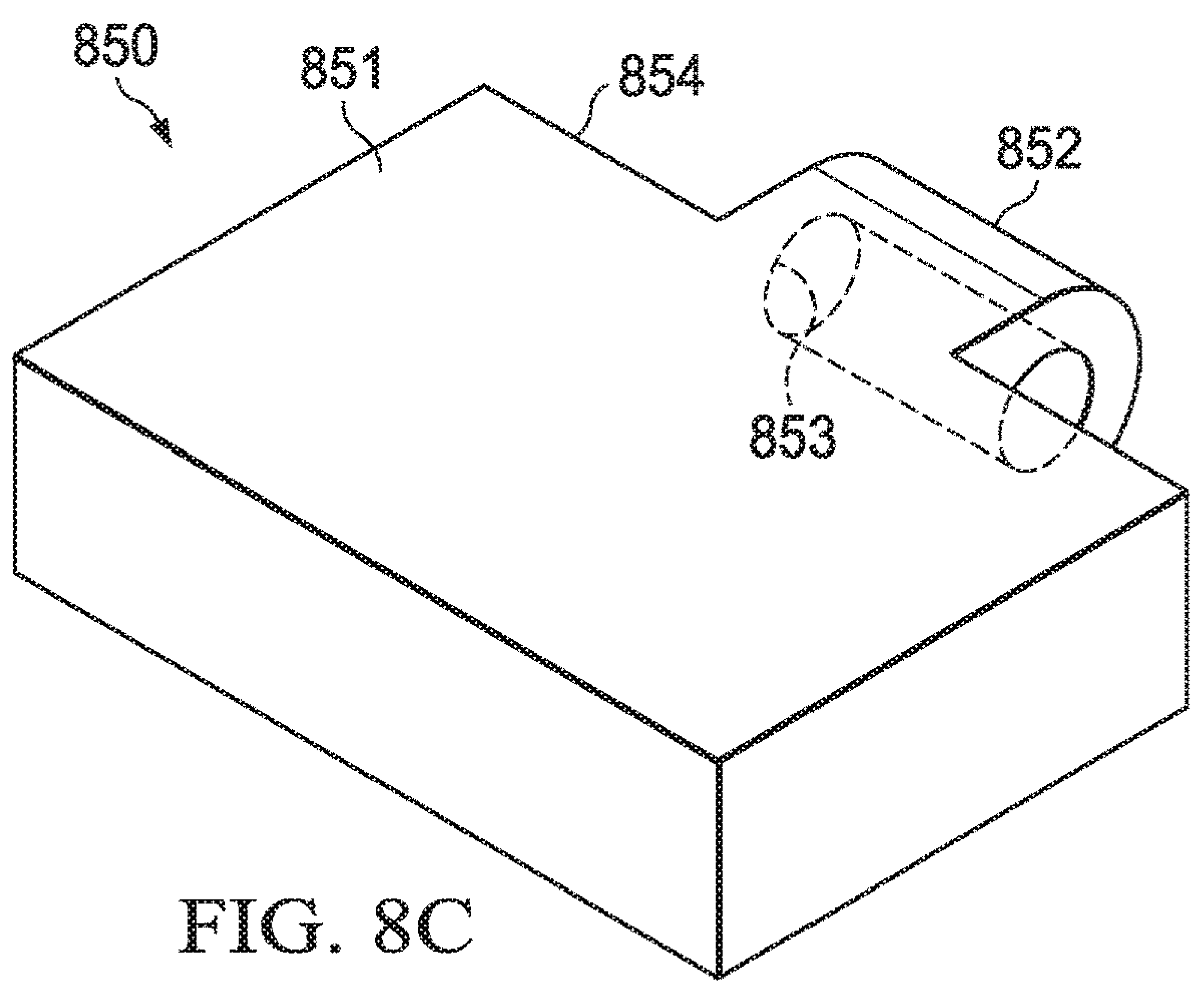



FIG. 8C

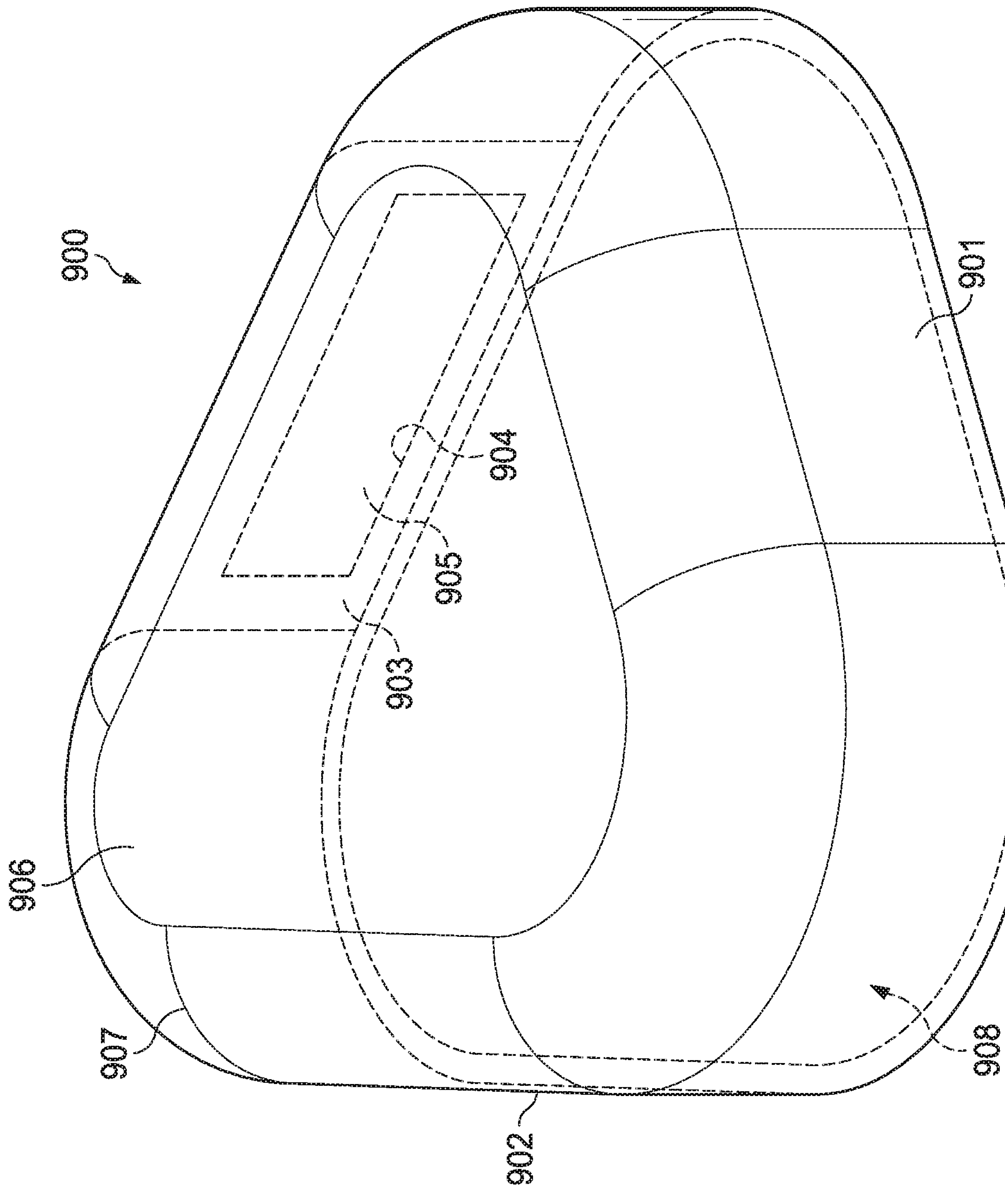



FIG. 9A

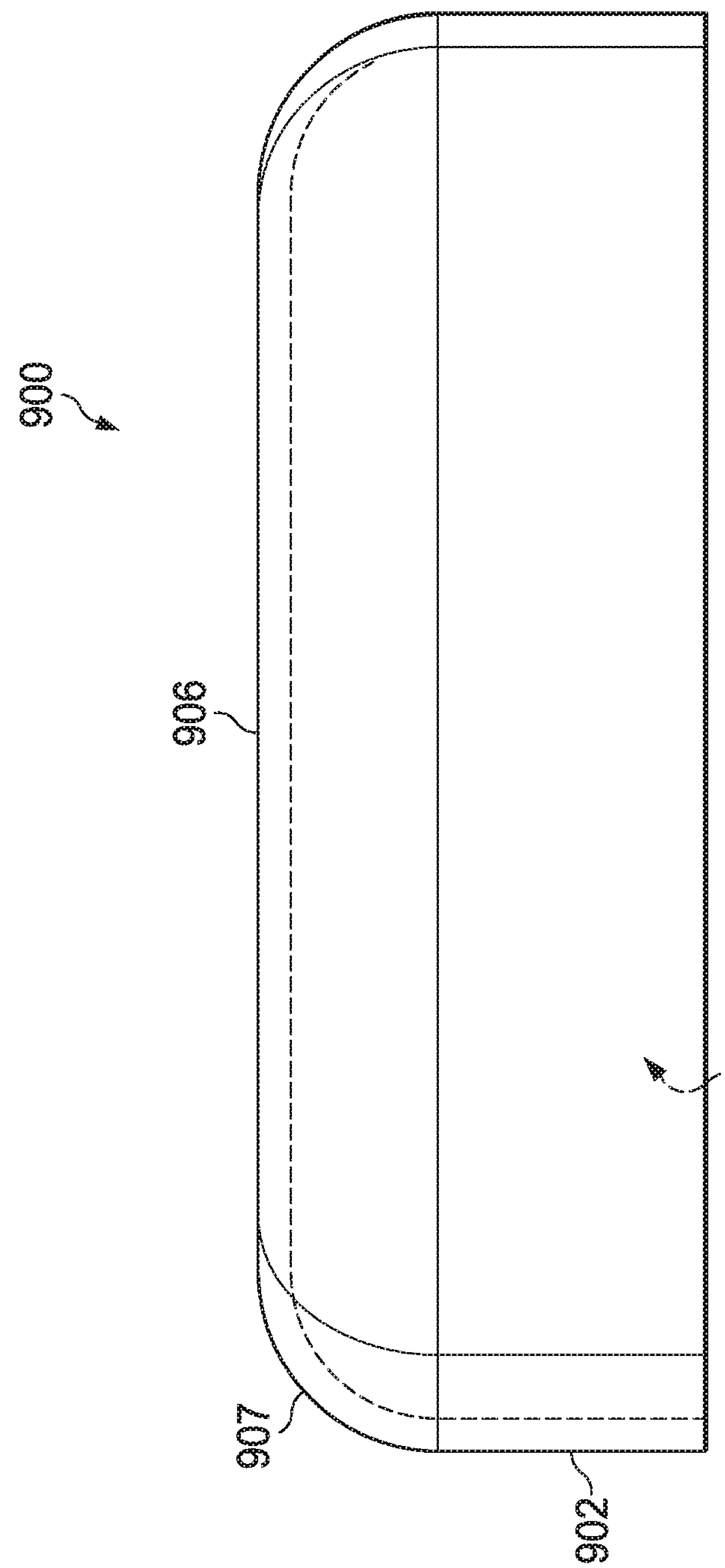



FIG. 9B

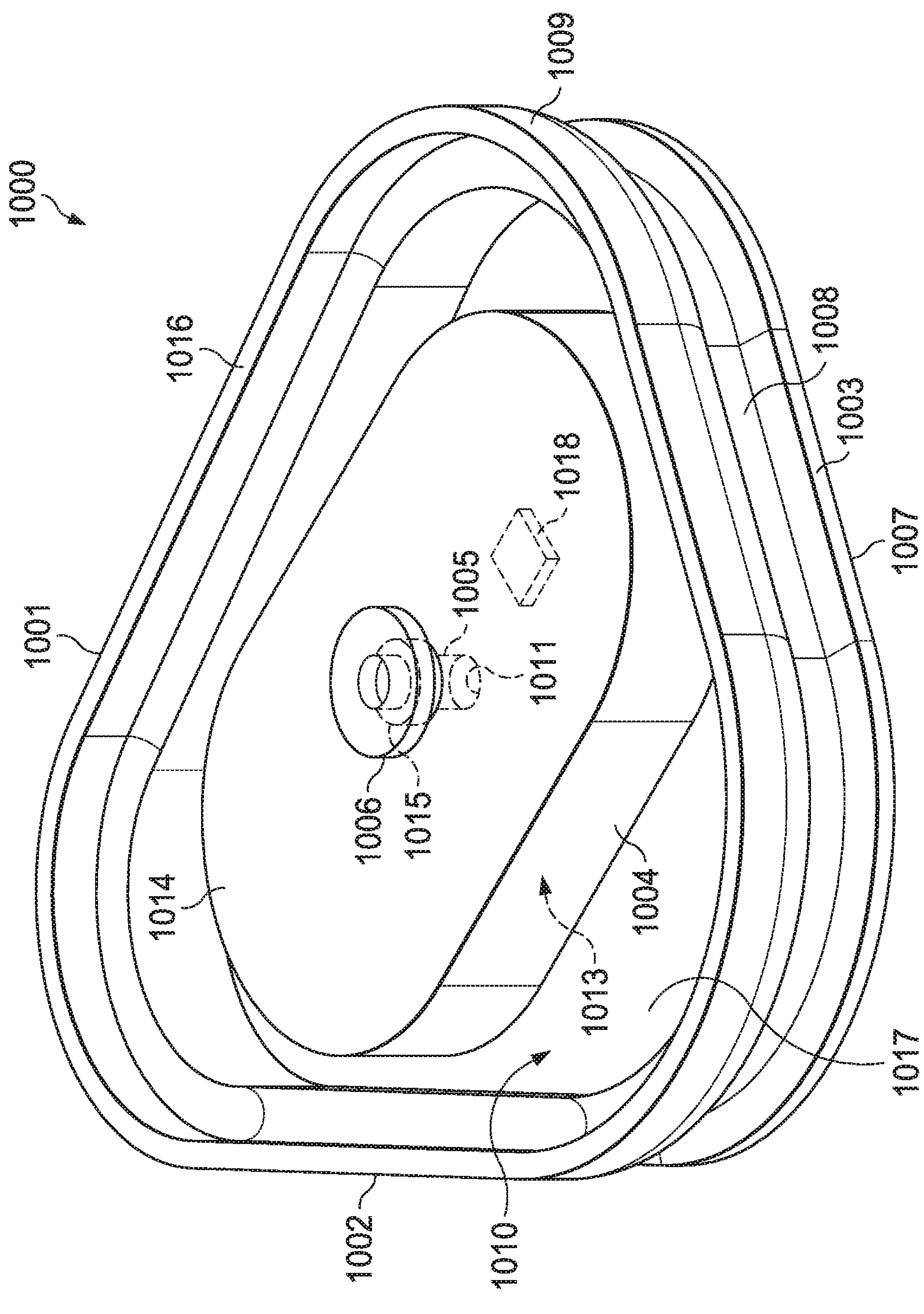

1000
1001
1016
1009
1008
1003
1007
1018
1005
1011
1006
1015
1014
1004
1013
1017
1002
1010

FIG. 10A

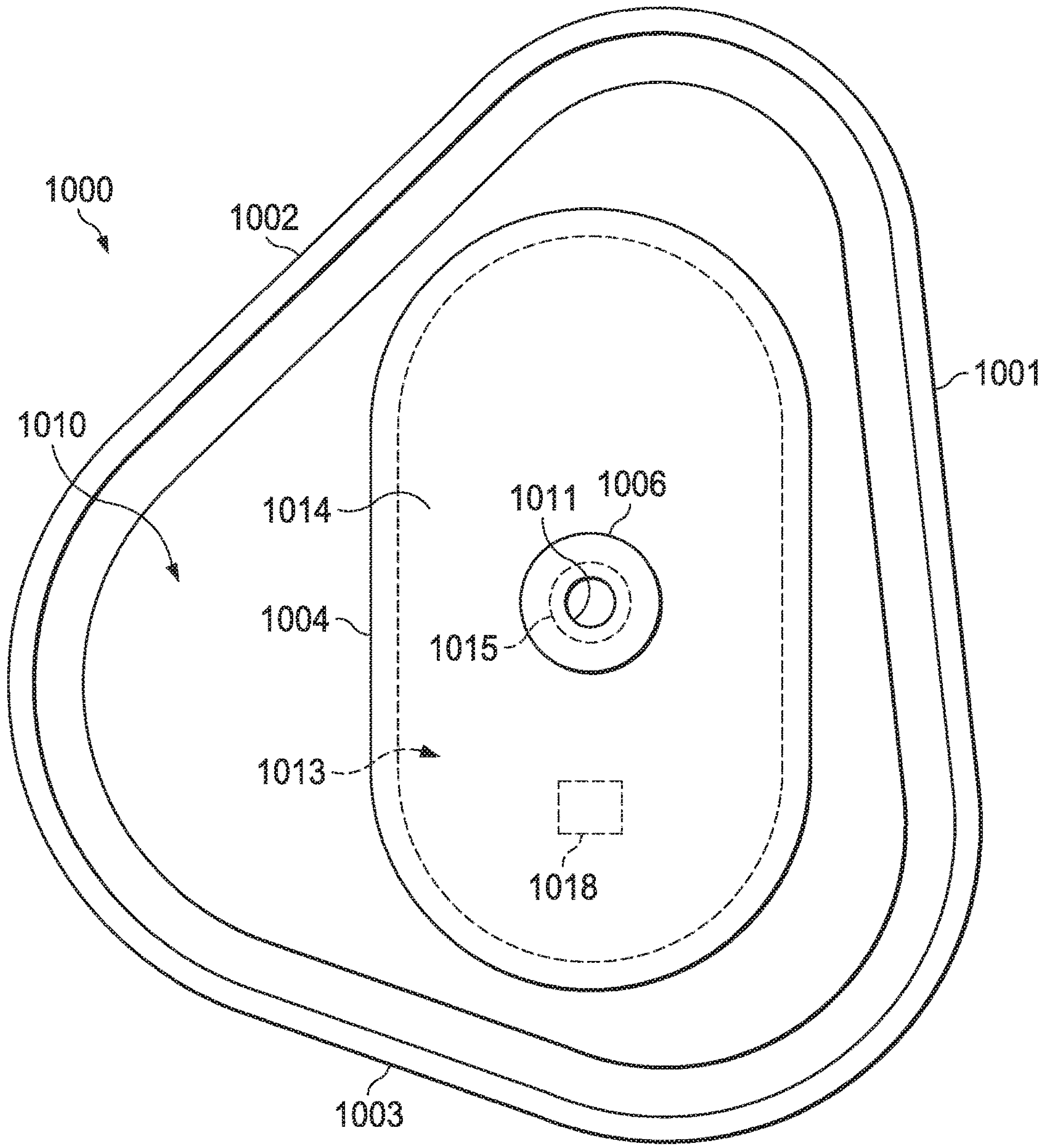



FIG. 10B

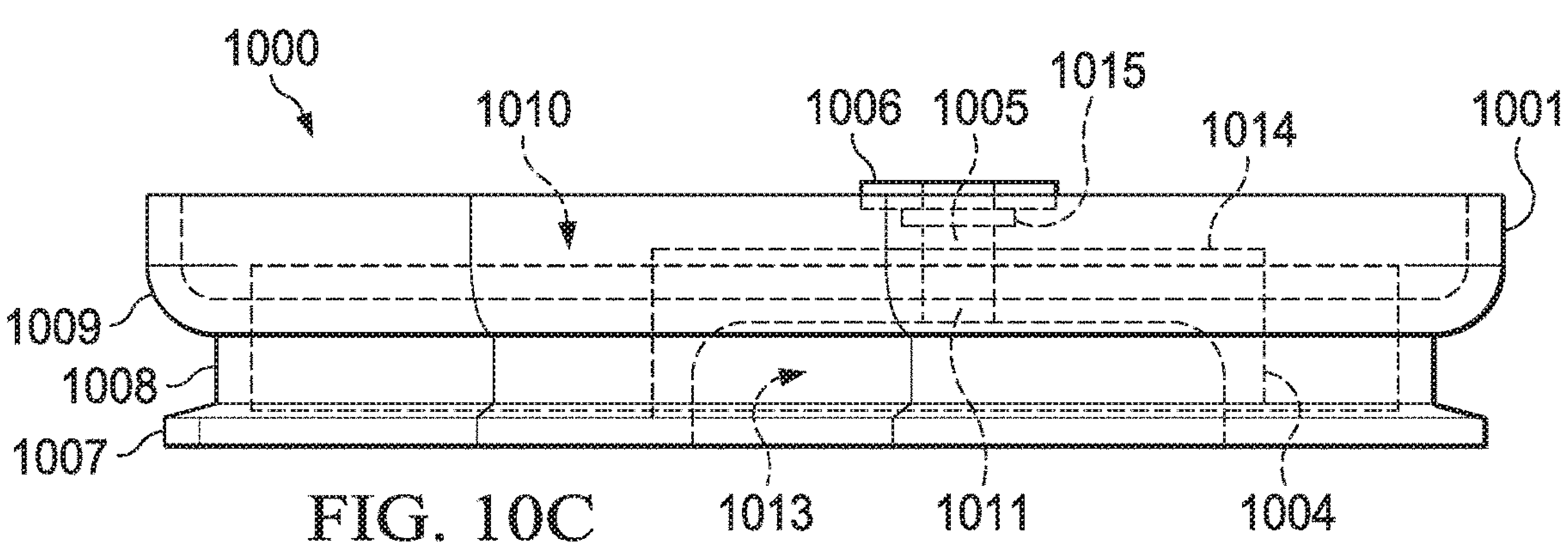



FIG. 10C

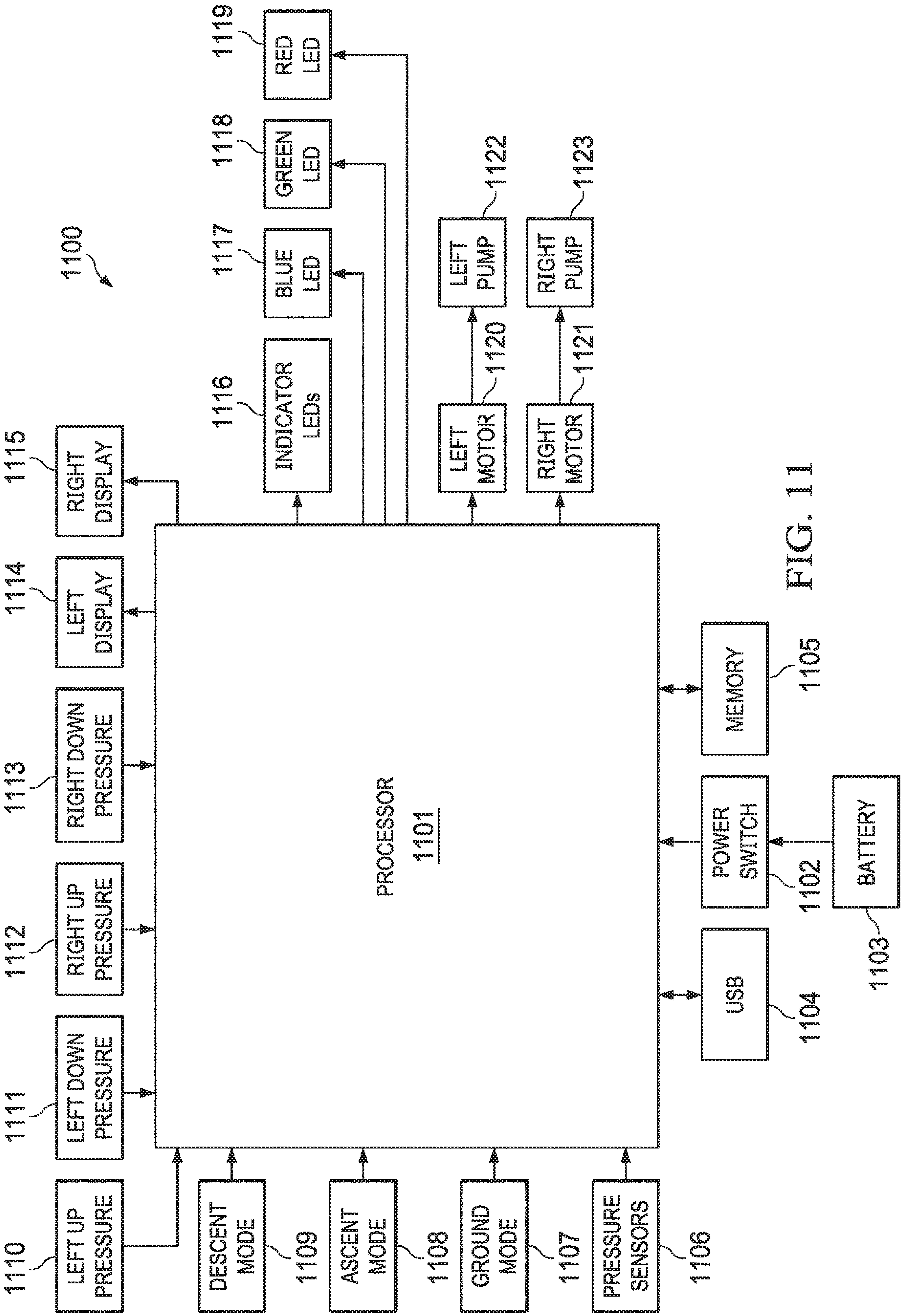

1100
PROCESSOR
1101
LEFT UP PRESSURE
1110
LEFT DOWN PRESSURE
1111
RIGHT UP PRESSURE
1112
RIGHT DOWN PRESSURE
1113
LEFT DISPLAY
1114
RIGHT DISPLAY
1115
INDICATOR LEDs
1116
BLUE LED
1117
GREEN LED
1118
RED LED
1119
LEFT MOTOR
1120
RIGHT MOTOR
1121
LEFT PUMP
1122
RIGHT PUMP
1123
DESCENT MODE
1109
ASCENT MODE
1108
GROUND MODE
1107
PRESSURE SENSORS
1106
USB
1104
POWER SWITCH
1102
BATTERY
1103
MEMORY
1105

FIG. 11

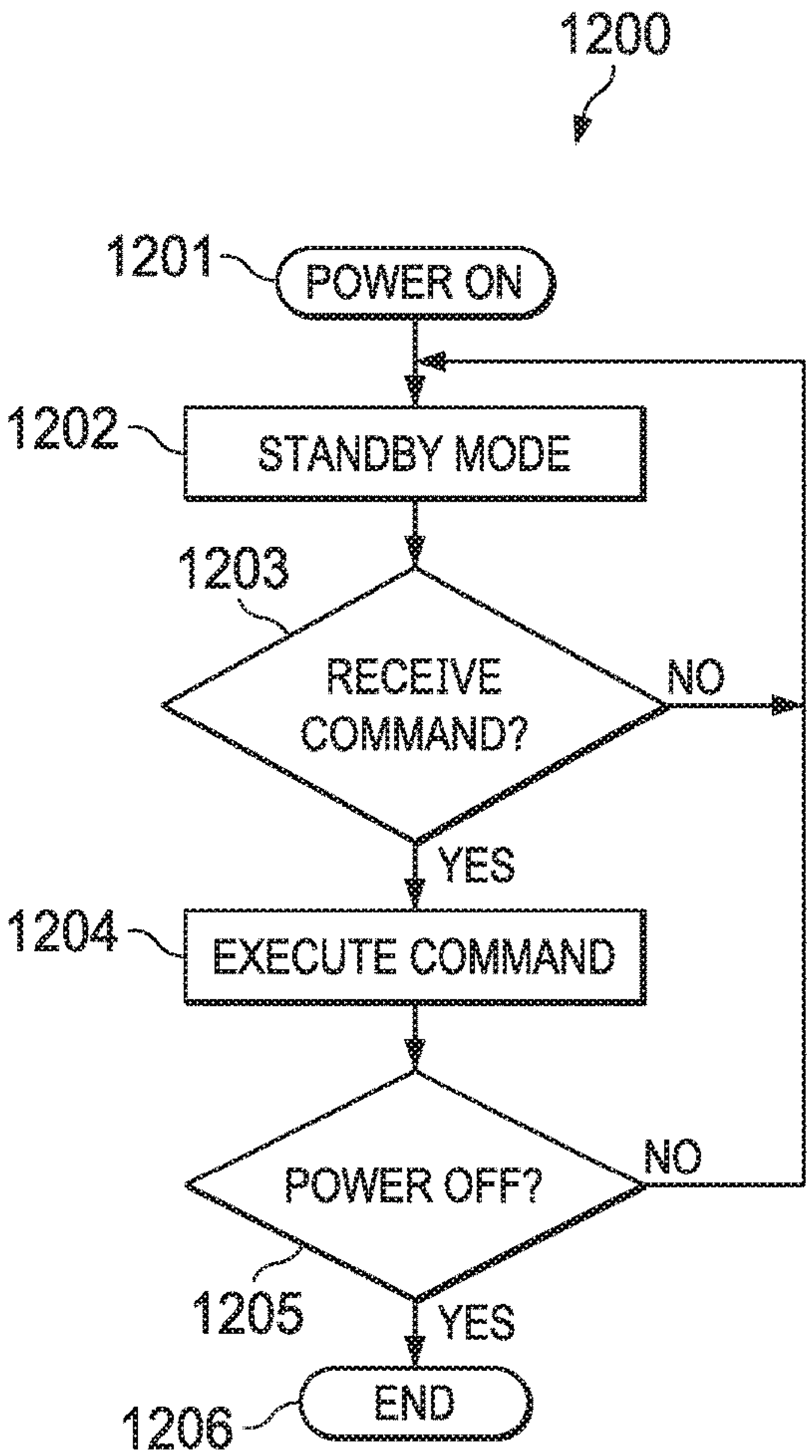

1200
1201
POWER ON
1202
STANDBY MODE
1203
RECEIVE COMMAND?
NO
YES
1204
EXECUTE COMMAND
POWER OFF?
NO
1205
YES
1206
END

FIG. 12

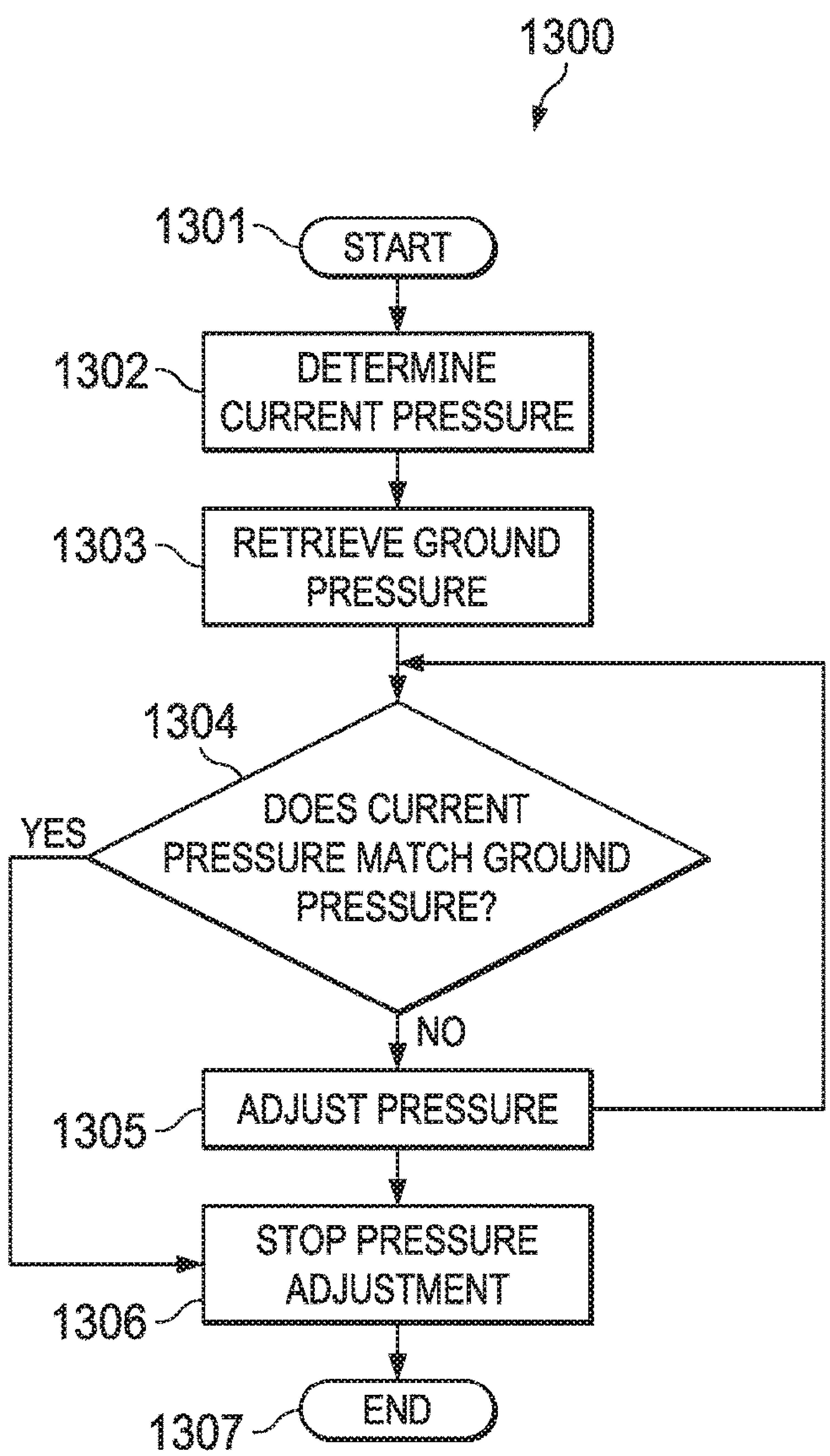

1300
1301
START
1302
DETERMINE CURRENT PRESSURE
1303
RETRIEVE GROUND PRESSURE
1304
YES
DOES CURRENT PRESSURE MATCH GROUND PRESSURE?
NO
1305
ADJUST PRESSURE
STOP PRESSURE ADJUSTMENT
1306
1307
END

FIG. 13

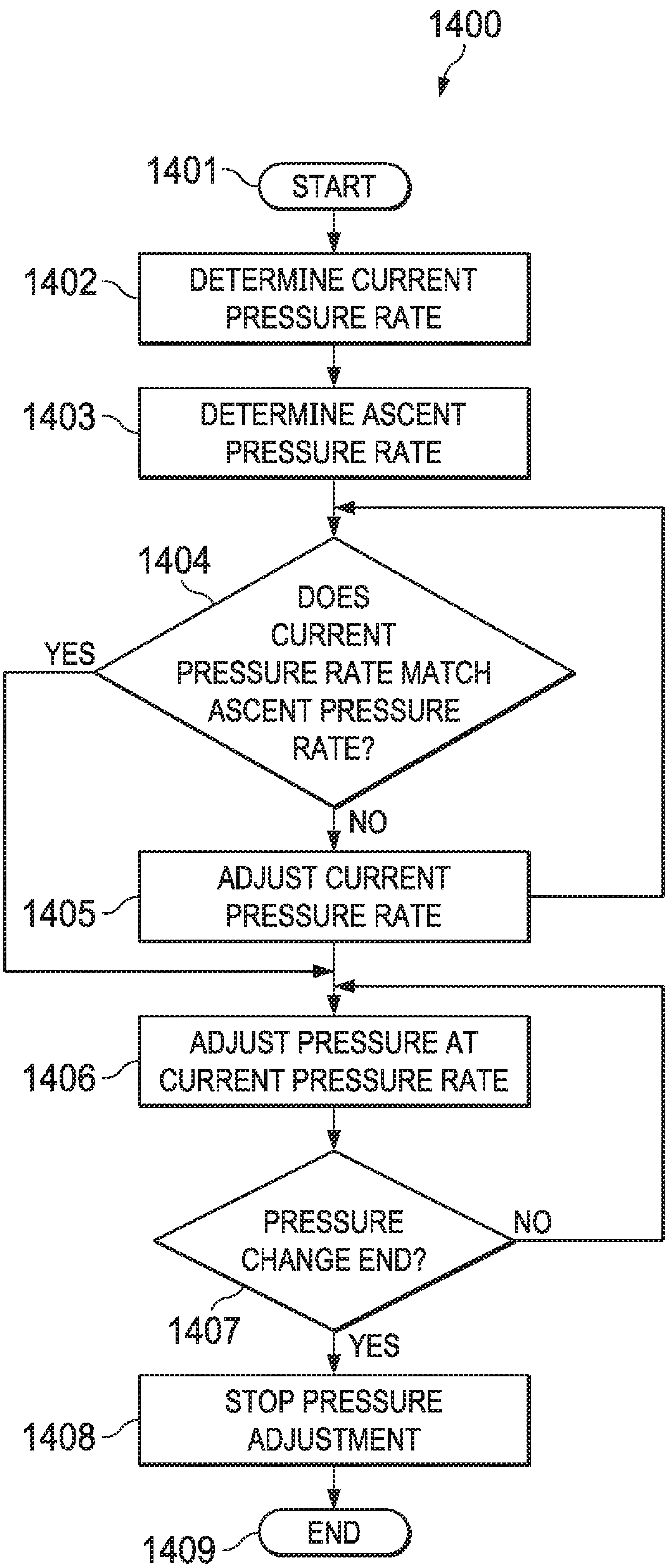

1400
1401
START
1402
DETERMINE CURRENT PRESSURE RATE
1403
DETERMINE ASCENT PRESSURE RATE
1404
DOES CURRENT PRESSURE RATE MATCH ASCENT PRESSURE RATE?
YES
NO
ADJUST CURRENT PRESSURE RATE
1405
ADJUST PRESSURE AT CURRENT PRESSURE RATE
1406
PRESSURE CHANGE END?
NO
1407
YES
STOP PRESSURE ADJUSTMENT
1408
END
1409

FIG. 14

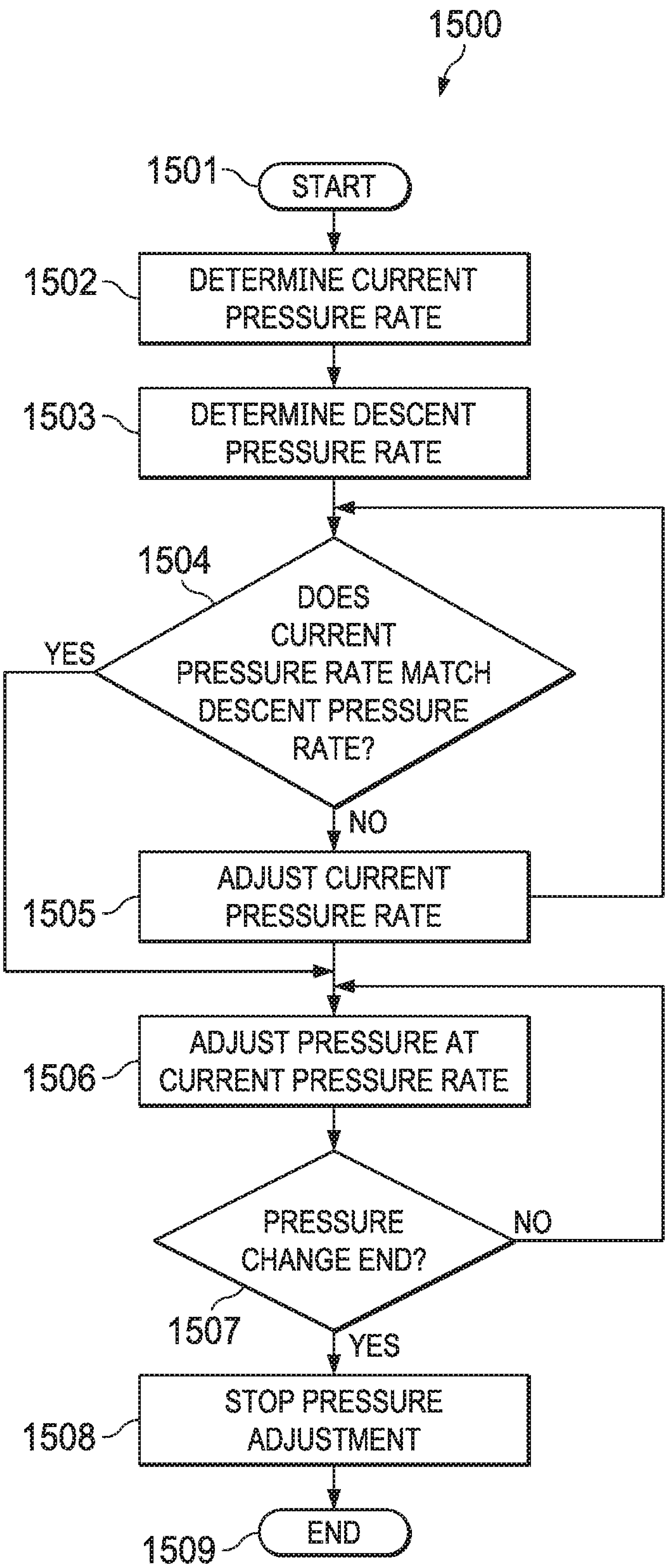

1500
1501
START
1502
DETERMINE CURRENT PRESSURE RATE
1503
DETERMINE DESCENT PRESSURE RATE
1504
DOES CURRENT PRESSURE RATE MATCH DESCENT PRESSURE RATE?
YES
NO
1505
ADJUST CURRENT PRESSURE RATE
1506
ADJUST PRESSURE AT CURRENT PRESSURE RATE
PRESSURE CHANGE END?
NO
1507
YES
1508
STOP PRESSURE ADJUSTMENT
1509
END

FIG. 15

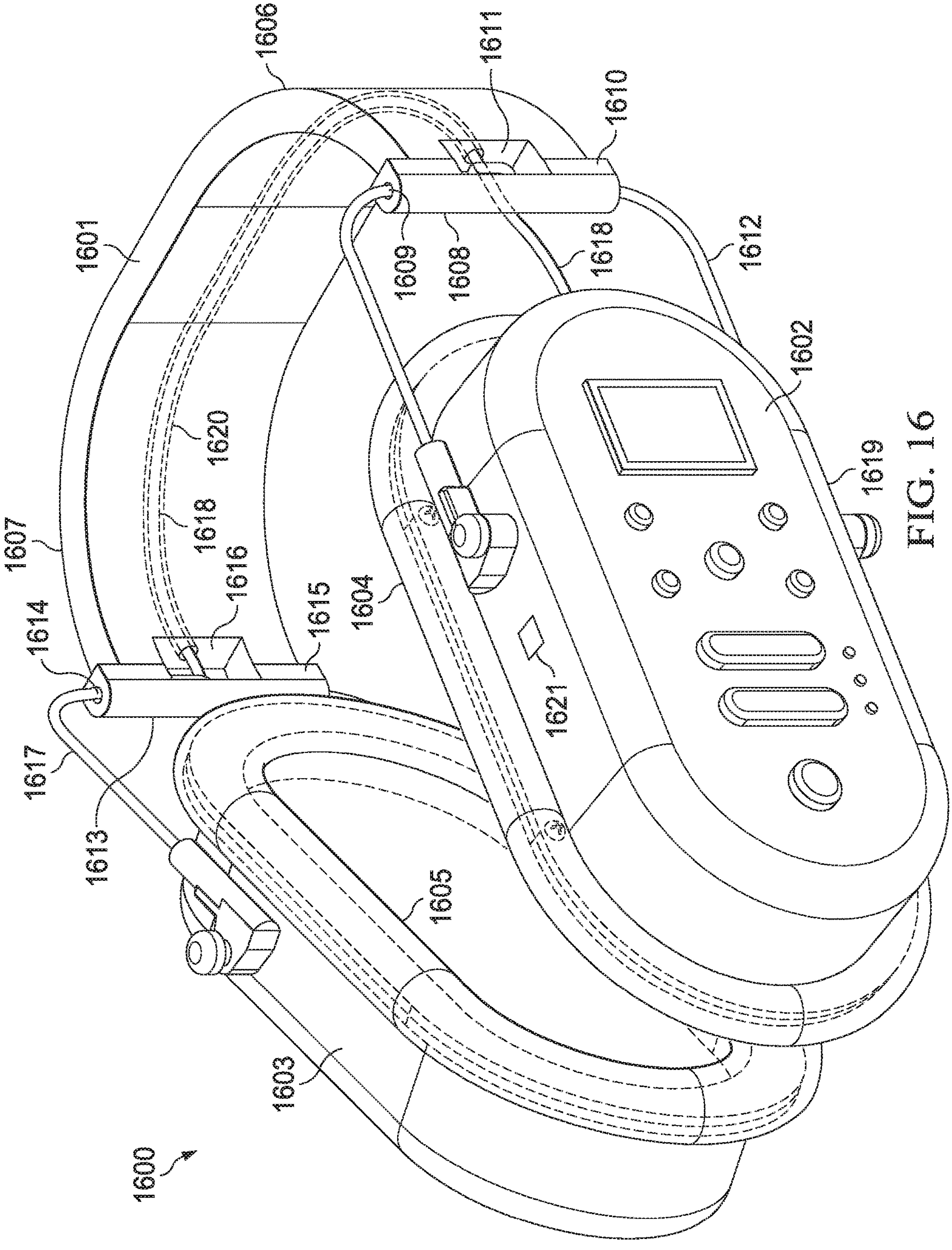

1600
1601
1602
1603
1604
1605
1606
1607
1608
1609
1610
1611
1612
1613
1614
1615
1616
1617
1618
1618
1619
1620
1621

FIG. 16

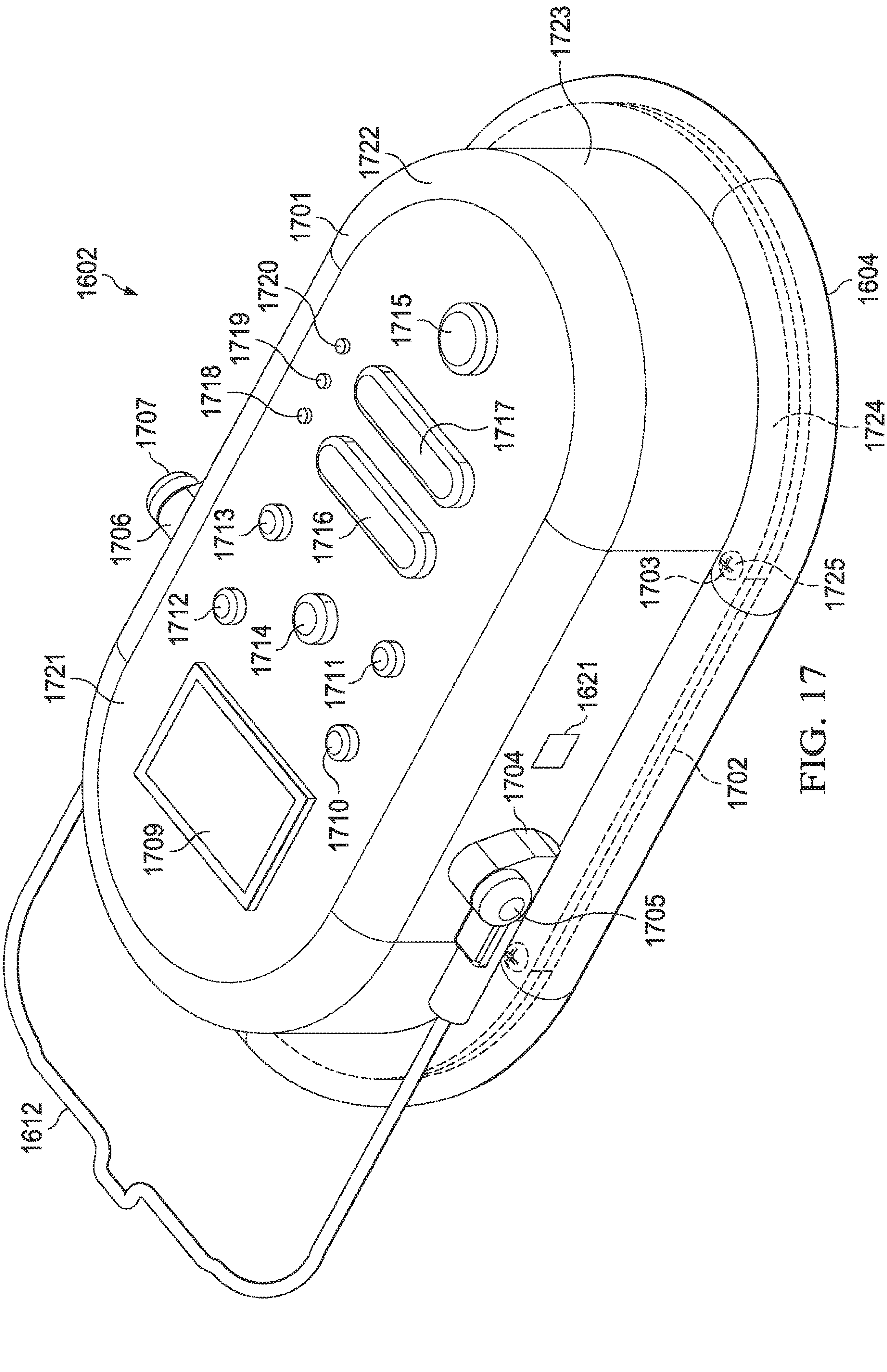

1602
1723
1722
1701
1720
1719
1718
1715
1707
1717
1706
1713
1716
1724
1604
1712
1703
1725
1714
1721
1711
1621
1709
1710
1704
1702
1705
1612

FIG. 17

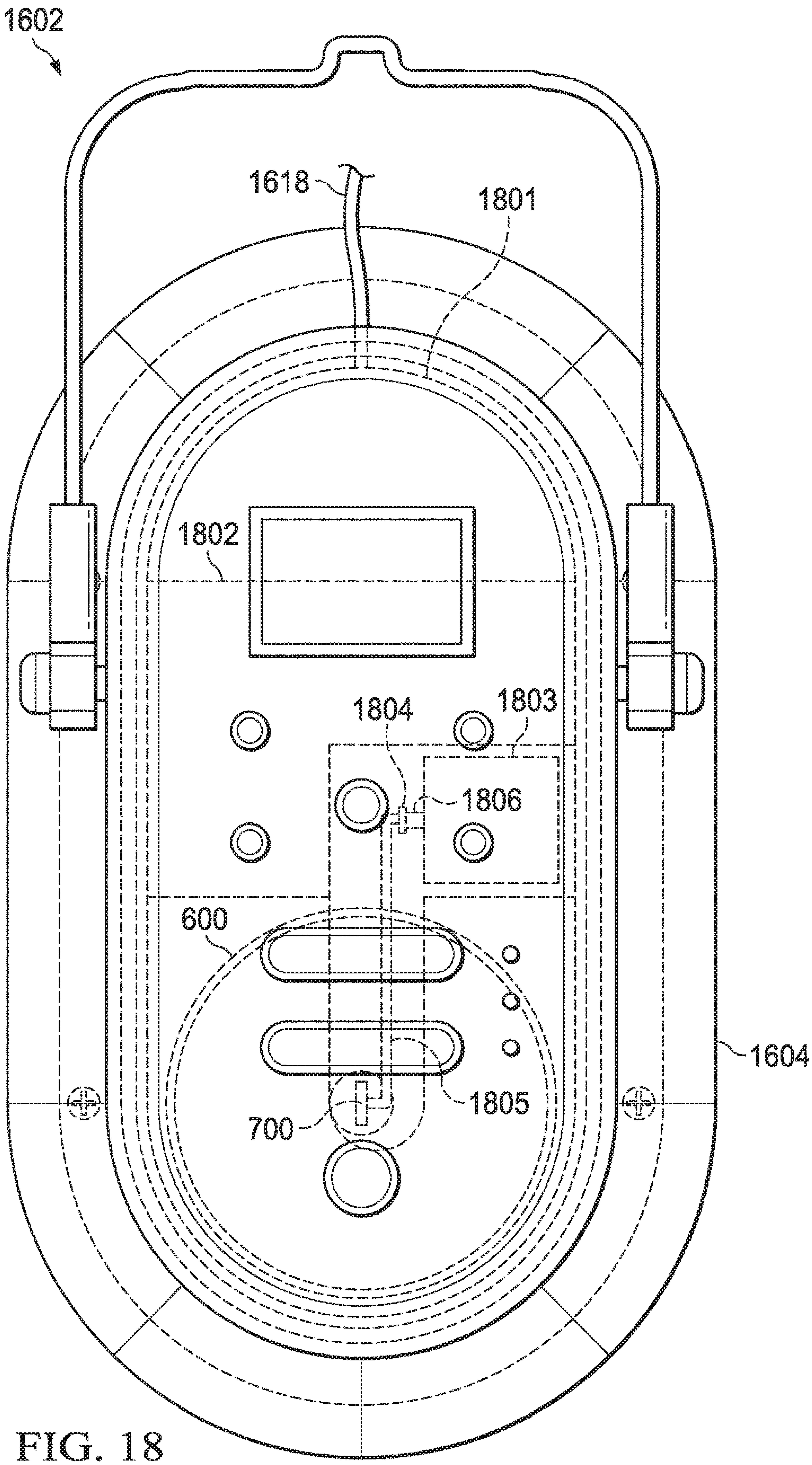



FIG. 18

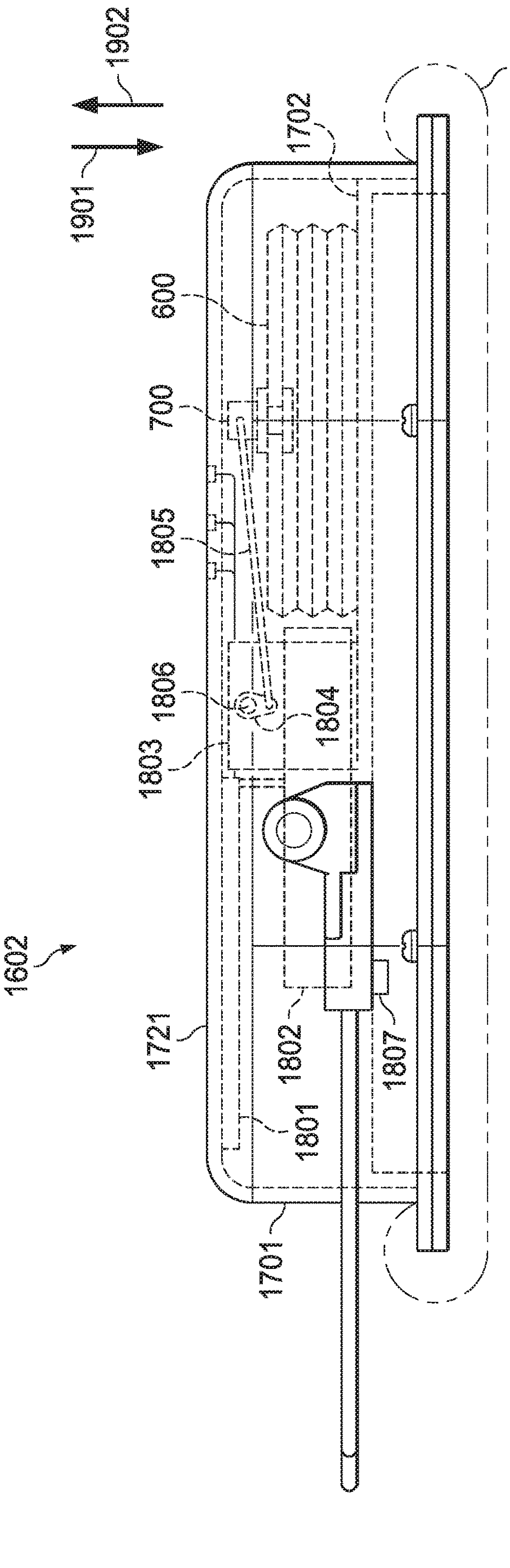

1902
1901
1604
1702
600
700
1805
1806
1804
1803
1602
1721
1802
1807
1801
1701

FIG. 19

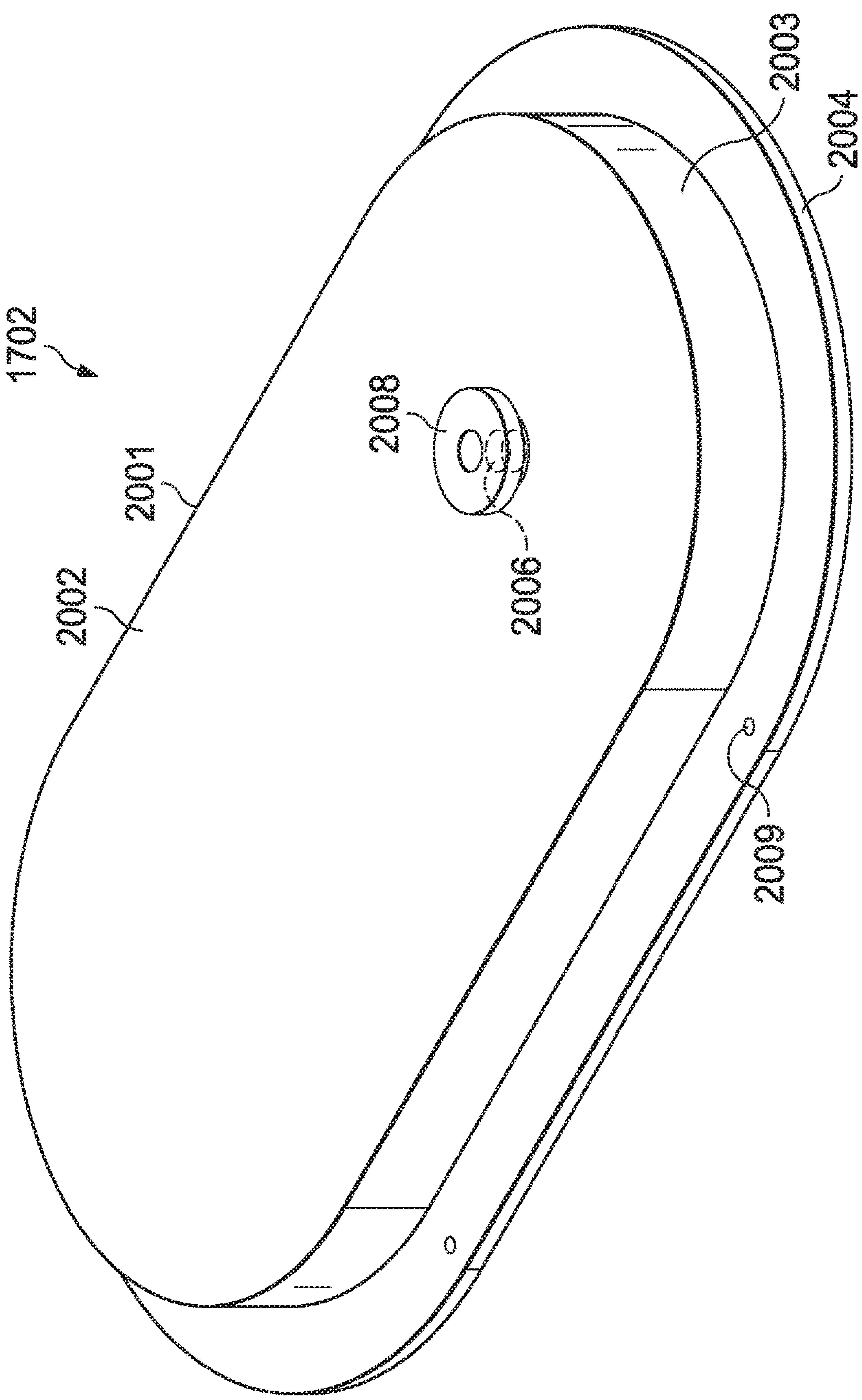



FIG. 20A

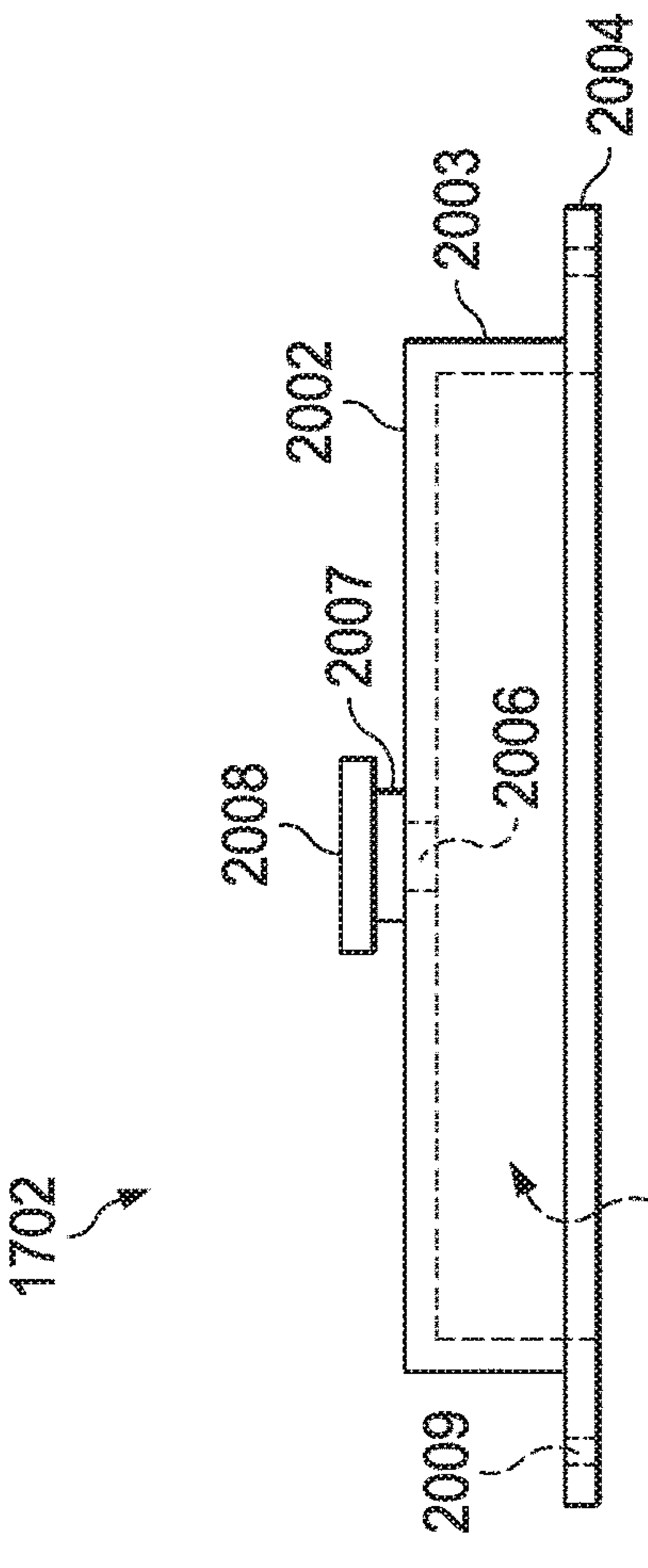



FIG. 20B

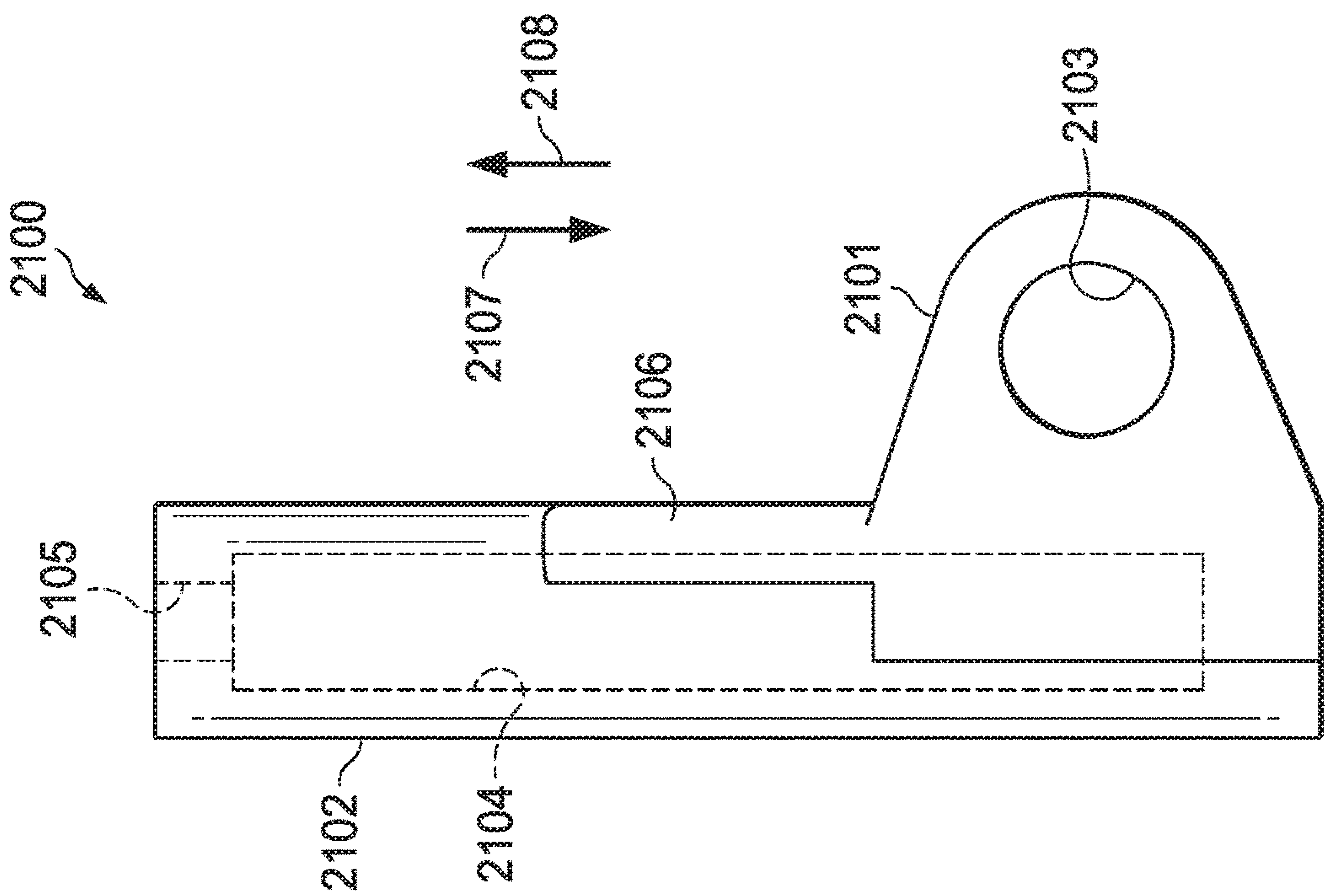



FIG. 21B

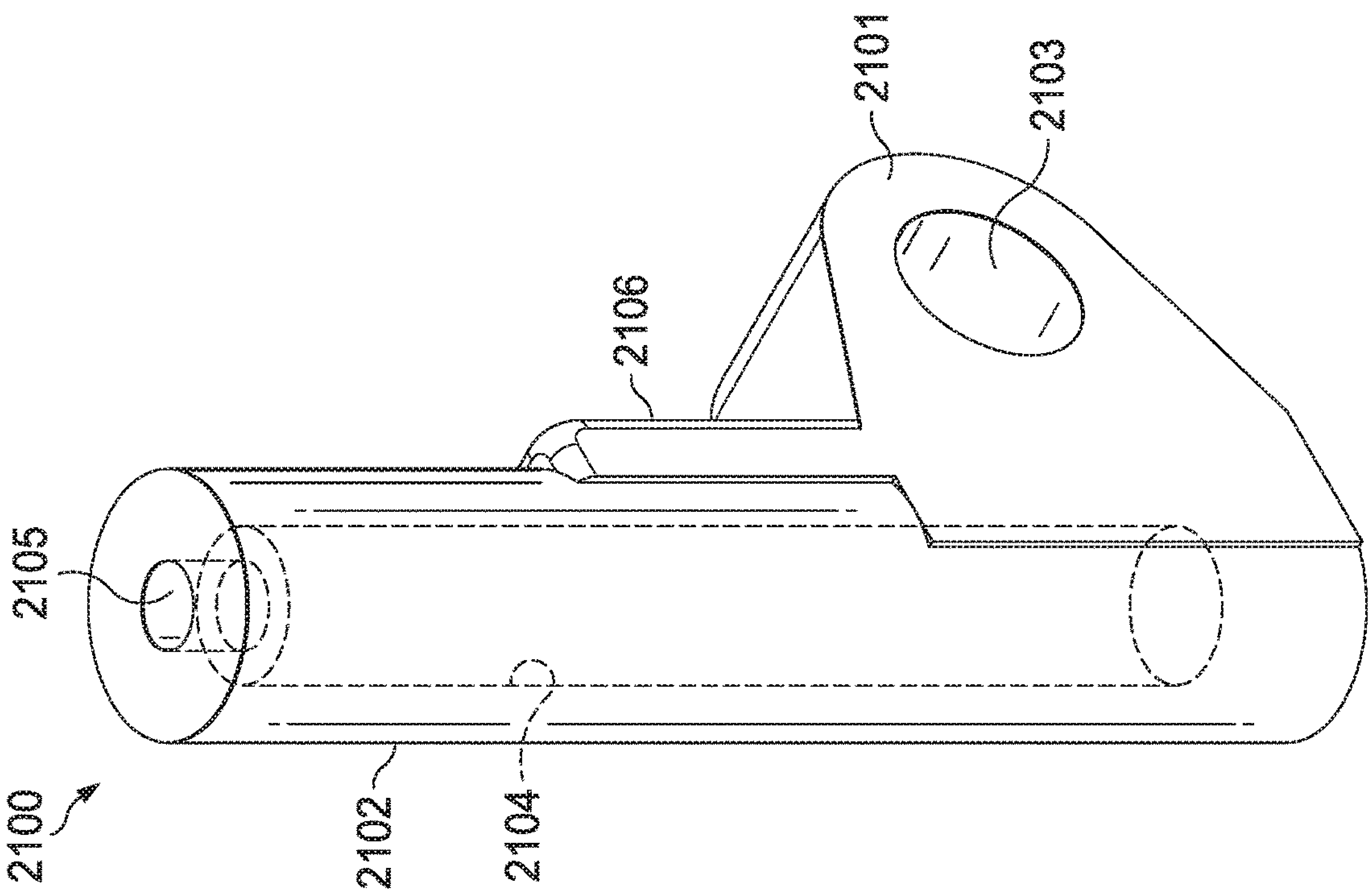



FIG. 21A

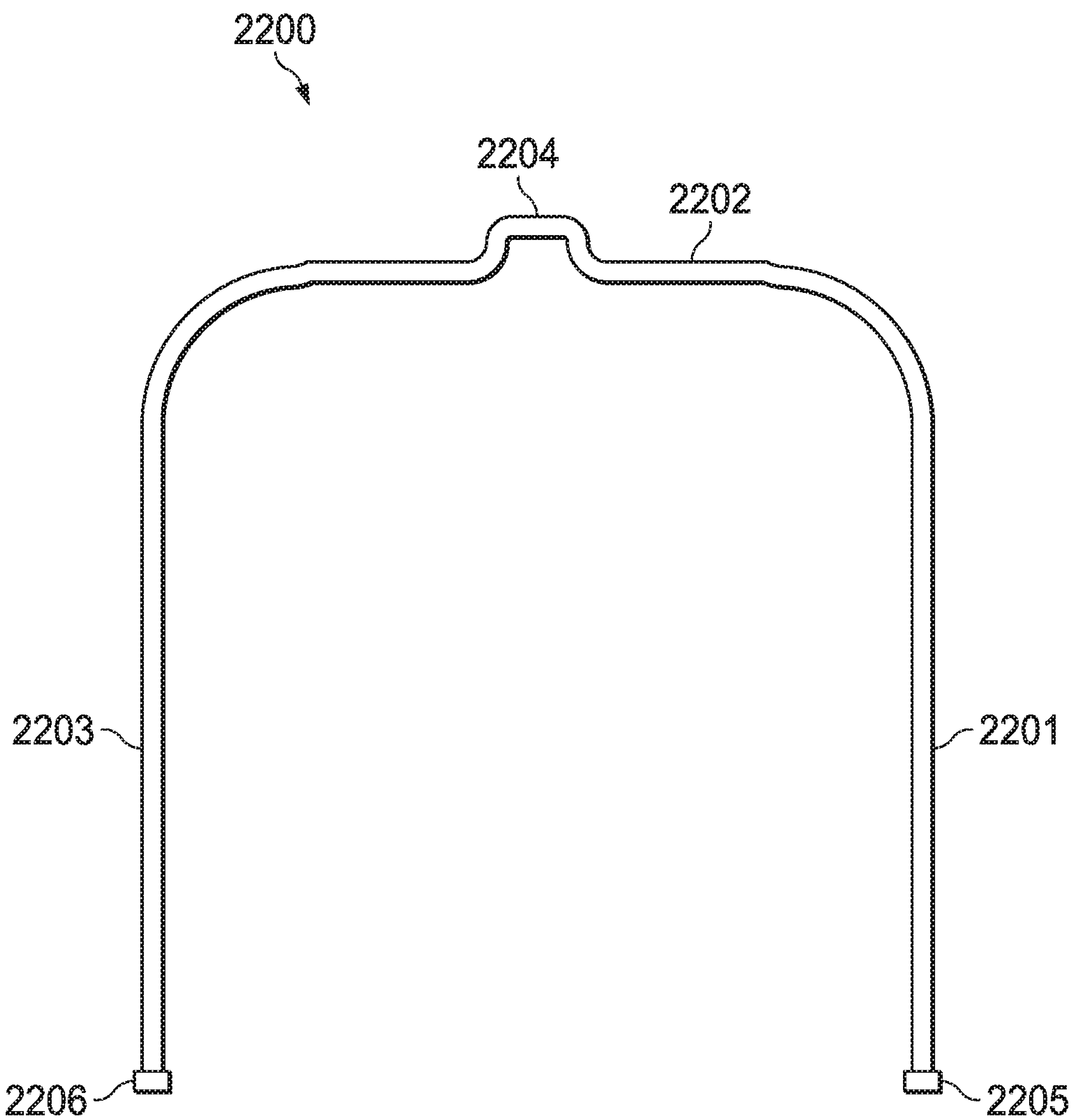
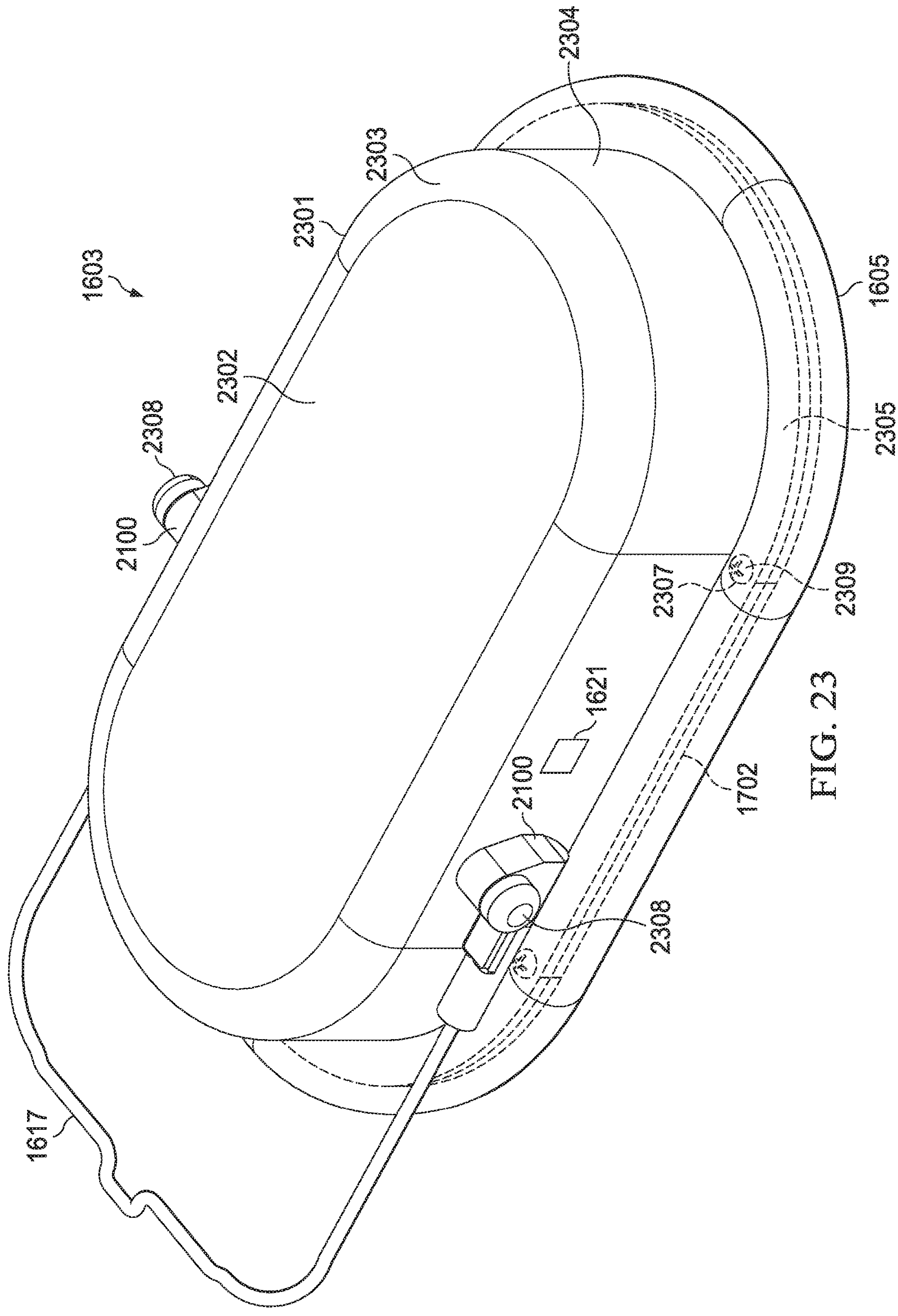



FIG. 22



1603
2304
2303
2301
2302
2308
2100
1605
2305
2307
2309
1621
2100
1702
2308
1617


FIG. 23

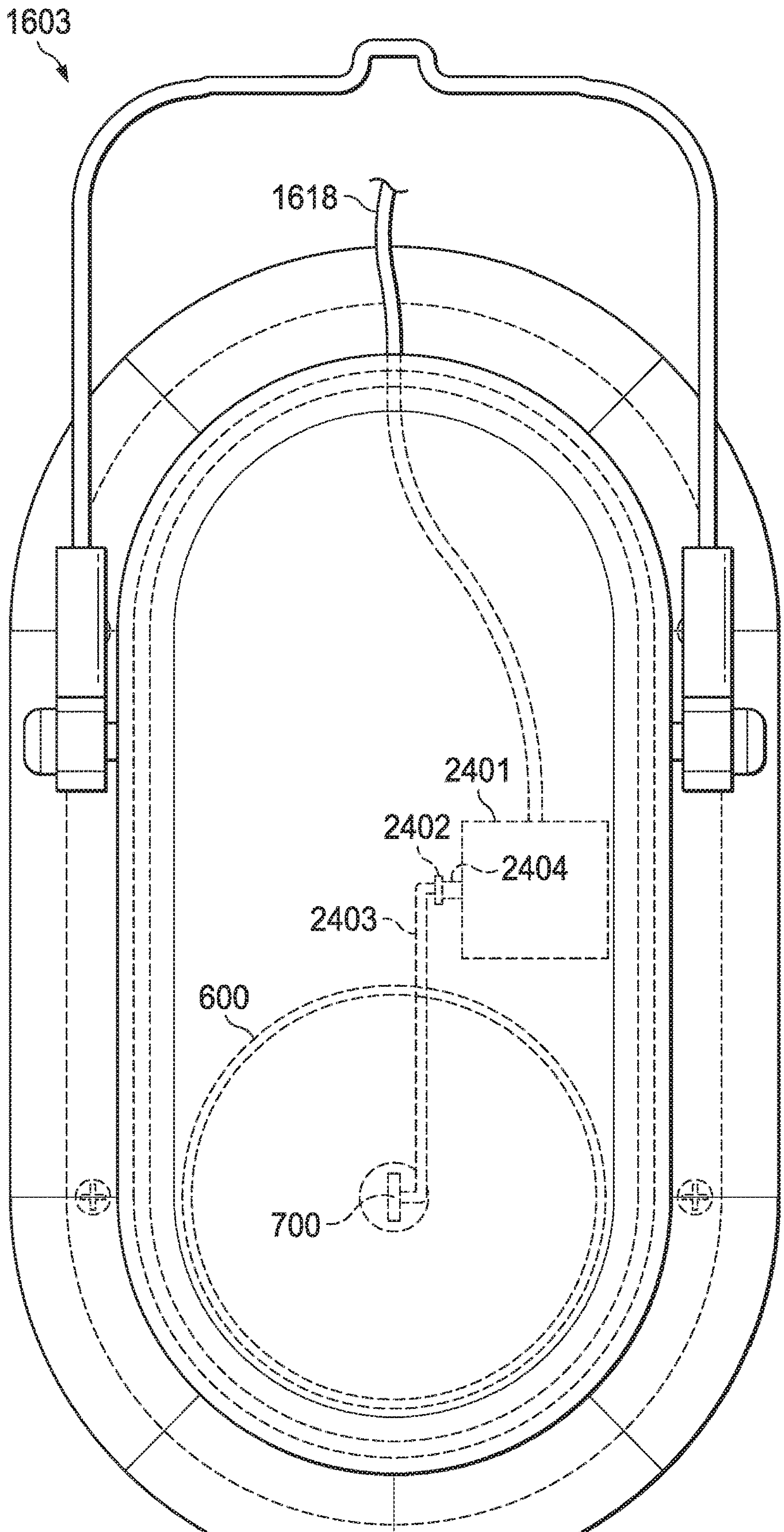



FIG. 24

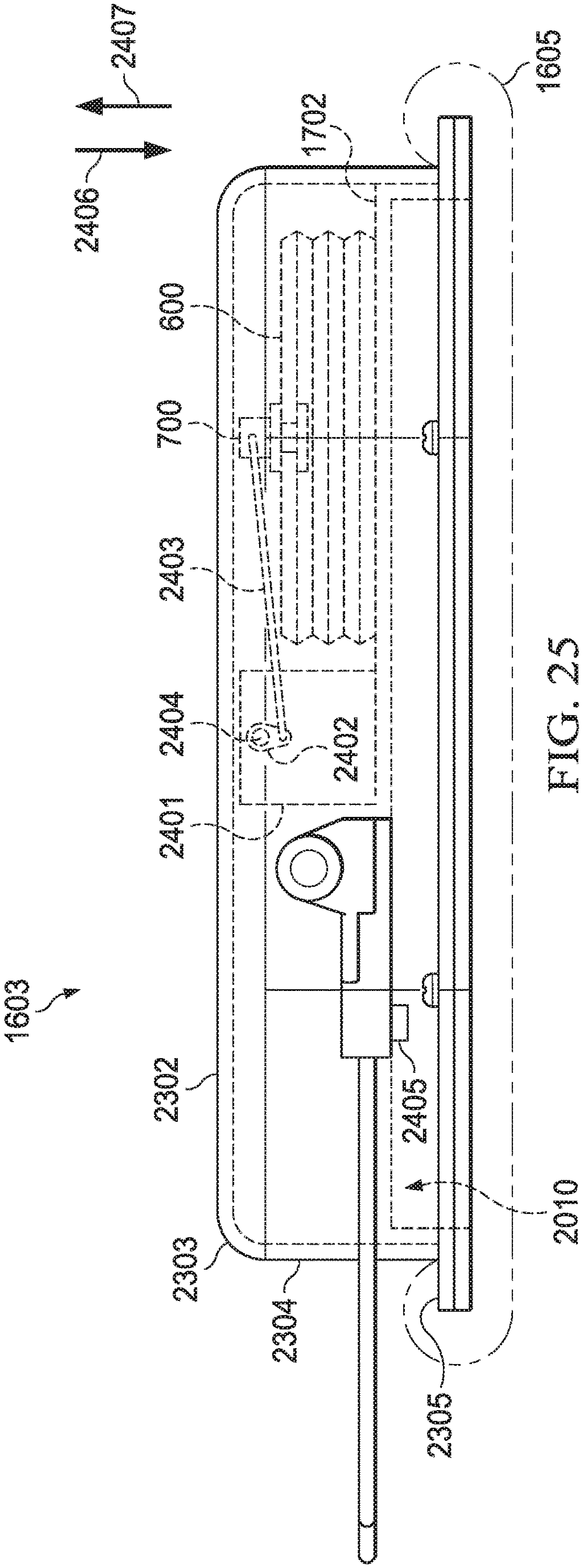

2407
2406
1605
1702
600
700
2403
2404
2402
2401
1603
2302
2405
2010
2303
2304
2305

FIG. 25

# HEADSET AND METHOD FOR AUTOMATIC REDUCTION OF EAR PRESSURE AND BAROTRAUMA

## CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority to U.S. Provisional Application No. 62/506,827, filed May 16, 2017. This patent application is incorporated herein by reference in its entirety to provide continuity of disclosure.

## FIELD OF THE INVENTION

The present invention relates to systems, apparatuses, and methods for ear protection. In particular, the present invention relates to a headset and method for the automatic adjustment of pressure and barotrauma on human ears.

## BACKGROUND OF THE INVENTION

Barotrauma is a condition of a human ear wherein a pressure difference is present between the inner ear and outer ear, commonly caused by altitude changes usually in an ascent and a descent during flight. In some cases, the pressure difference can be relieved conventionally by yawning, or chewing gum. However, individuals with congestion and/or blocked Eustachian tubes are incapable of solving this condition through these conventional methods. In some cases, antibiotics or steroids may need to be prescribed to relieve possible inflammation or infection.

Further, in some severe cases ear barotrauma can cause a ruptured eardrum. In such cases, self-healing of the ruptured eardrum can take up to two to three weeks. In most severe cases where self-healing is insufficient, surgery is required to repair the damage. In chronic cases of ear barotrauma, ear tubes may be surgically implanted to relieve the condition and may require further surgeries to reinstall and/or maintain the ear tube implant.

Therefore, there is a need in the art for an exterior solution that slows the pressure change. There is a further need in the art for a device that allows users to fine tune the pressure to suit any desired need. There is another need in the art for a device to relieve the pressure agitation for infants and small children, who typically have smaller Eustachian tubes. A headset and method for relieving ear pressure and reducing barotrauma is disclosed.

## SUMMARY

A headset and method for controlling pressure in the ears of a user is disclosed. The headset includes a headband, a control earpiece connected to the headband, an earpiece connected to the headband, and a control system housed in the control earpiece and the earpiece to manually and/or automatically control the pressure in each of the control earpiece and the earpiece. In one embodiment, the pressure in each of the control earpiece and the earpiece is manually controlled by increasing and/or decreasing the pressure in each of the control earpiece and the earpiece. In another embodiment, the pressure in each of the control earpiece and the earpiece is automatically adjusted in a ground pressure mode, an ascent mode, and/or a descent mode.

## BRIEF DESCRIPTION OF THE DRAWINGS

In the detailed description presented below, reference will be made to the following drawings.

FIG. **1** is an isometric view of a control earpiece of a headset of a preferred embodiment.

FIG. **2** is an isometric view of an earpiece of a headset of a preferred embodiment.

FIG. **3** is an end view of a headband of a headset of a preferred embodiment.

FIG. **4**A is an isometric view of an outer shell of a control earpiece of a headset of a preferred embodiment.

FIG. **4**B is a side view of an outer shell of a control earpiece of a headset of a preferred embodiment.

FIG. **4**C is an end view of an outer shell of a control earpiece of a headset of a preferred embodiment.

FIG. **5**A is an isometric view of an inner shell of a control earpiece of a headset of a preferred embodiment.

FIG. **5**B is a side view of an inner shell of a control earpiece of a headset of a preferred embodiment.

FIG. **5**C is an end view of an inner shell of a control earpiece of a headset of a preferred embodiment.

FIG. **6**A is a perspective view of a pump of a headset of a preferred embodiment.

FIG. **6**B is a side view of a pump of a headset of a preferred embodiment.

FIG. **7**A is a side view of a pump connector of a headset of a preferred embodiment.

FIG. **7**B is a side view of a pump connector of a headset of a preferred embodiment.

FIG. **8**A is a side view of an outer hinge of a headset of a preferred embodiment.

FIG. **8**B is a side view of an outer hinge of a headset of a preferred embodiment.

FIG. **8**C is an isometric view of an inner hinge of a headset of a preferred embodiment.

FIG. **9**A is an isometric view of an outer shell of an earpiece of a headset of a preferred embodiment.

FIG. **9**B is an end view of an outer shell of an earpiece of a headset of a preferred embodiment.

FIG. **10**A is an isometric view of an inner shell of an earpiece of a headset of a preferred embodiment.

FIG. **10**B is a side view of an inner shell of an earpiece of a headset of a preferred embodiment.

FIG. **10**C is an end view of an inner shell of an earpiece of a headset of a preferred embodiment.

FIG. **11** is a block diagram of a control system of a headset of a preferred embodiment.

FIG. **12** is a flowchart of a method for operating a headset of a preferred embodiment.

FIG. **13** is a flowchart of a method of implementing a ground pressure mode on a headset of a preferred embodiment.

FIG. **14** is flowchart of a method of implementing an ascent pressure mode on a headset of a preferred embodiment.

FIG. **15** is a flowchart of method of implementing a descent pressure mode on a headset of a preferred embodiment.

FIG. **16** is an isometric view of a headset of a preferred embodiment.

FIG. **17** is an isometric view of a control earpiece of a headset of a preferred embodiment.

FIG. **18** is a side sectional view of a control earpiece of a headset of a preferred embodiment.

FIG. **19** is a side sectional view of a control earpiece of a headset of a preferred embodiment.

FIG. **20**A is an isometric view of an inner shell of a headset of a preferred embodiment.

FIG. **20**B is an end sectional view of an inner shell of a headset of a preferred embodiment.

FIG. **21**A is an isometric view of a connector of a headset of a preferred embodiment.

FIG. **21**B is a side view of a connector of a headset of a preferred embodiment.

FIG. **22** is a side view of a connector wire of a headset of a preferred embodiment.

FIG. **23** is an isometric view of an earpiece of a preferred embodiment.

FIG. **24** is a side sectional view of an earpiece of a preferred embodiment.

FIG. **25** is a side sectional view of an earpiece of a preferred embodiment.

## DETAILED DESCRIPTION

Referring to FIG. **1** in one embodiment, control earpiece **100** includes outer shell **101** and inner shell **102** connected to outer shell **101**. Outer shell **101** includes connector **104** for connection to a headband. Outer shell **101** includes a set of controls **103** that will be further described below.

In a preferred embodiment, connector **104** is a hinge connection. Other suitable connection means known in the art may be employed.

In a preferred embodiment, control earpiece **100** has a generally triangular shape and is sized to fit over the ear of a user. Other suitable shapes, sizes, and fits known in the art may be employed, including ear bud styles.

In a preferred embodiment, control earpiece **100** is worn on the left ear of the user. In another embodiment, control earpiece **100** is worn on the right ear of the user. In other embodiments, control earpiece **100** is worn on each of the left ear and right ear of the user such that each control earpiece **100** controls the pressure in the ear on which the respective control earpiece **100** is worn.

Referring to FIG. **2**, earpiece **200** includes outer shell **201** and inner shell **202** connected to outer shell **201**. Outer shell **201** includes display **203** and connector **204** for connection to a headband.

In a preferred embodiment, connector **204** is a hinge connection. Other suitable connection means known in the art may be employed.

In a preferred embodiment, earpiece **200** has a generally triangular shape and is sized to fit over the ear of a user. Other suitable shapes, sizes, and fits known in the art may be employed, including ear bud styles.

In a preferred embodiment, control earpiece **100** is worn on the right ear of the user. In this embodiment, earpiece **200** is worn on the left ear of the user. In another embodiment, control earpiece **100** is worn on the left ear of the user. In this embodiment, earpiece **200** is worn on the right ear of the user. In other embodiments, earpiece **200** is substituted by control earpiece **100**, which is worn on each of the left ear and right ear of the user such that each control earpiece **100** controls the pressure in the ear on which the respective control earpiece **100** is worn.

Referring to FIG. **3**, headband **300** includes main portion **301**, first connector portion **302** adjustably connected to main portion **301**, and second connector portion **303** adjustably connected to main portion **301**. Connector portion **302** includes connector **304** for connection to control earpiece **100** or earpiece **200**. Connector portion **303** includes connector **305** for connection to control earpiece **100** or earpiece **200**.

In a preferred embodiment, headband **300** is made of a durable plastic. Other suitable materials known in the art may be employed.

In a preferred embodiment, each of connectors **304** and **305** is a hinge connection. Other suitable connection means known in the art may be employed.

Referring to FIGS. **4**A, **4**B, and **4**C, outer shell **101** will be further described as outer shell **400**. Outer shell **400** includes shell **401**. Shell **401** includes sides **402**, **403**, and **404**. Transition **406** is attached to each of sides **402**, **403**, and **404** and outer surface **405** forming shell cavity **417**. Outer surface **405** includes display **451**, ascent mode button **407**, ground level mode button **408**, and descent mode button **409**. Outer surface **405** further includes left increase pressure button **410**, left decrease pressure button **411**, right increase pressure button **412**, right decrease pressure button **413**, low battery LED indicator **414**, pressure warning LED indicator **415**, and device charged LED indicator **416**. Side **404** includes power button **452**. Side **403** includes ambient sensor **418**. Outer shell **400** provides a housing for a control system to control a pressure as will be further described below.

In a preferred embodiment, outer shell **400** is made of plastic. Other suitable materials known in the art may be employed including metals and metal alloys.

Referring to FIGS. **5**A, **5**B, **5**C, inner shell **102** will be further described as inner shell **500**. Inner shell **500** includes sides **501**, **502**, and **503** and inner surface **517** to form shell cavity **510**. Platform **504** includes surface **514** and forms cavity **513** opposite surface **514**. Set of pressure sensors **518** is positioned in cavity **513** and in shell cavity **510**. Post **505** is attached to platform **504** and has hole **511** that extends through platform **504** into shell cavity **510**. Ring **506** is attached to post **505** opposite platform **504**. Ring **515** is attached to post **505** and positioned adjacent to ring **506**. In a preferred embodiment, ring **515** has a diameter less than a diameter of ring **506**. Each of sides **501**, **502**, and **503** includes annular ring **507**, channel **508** attached to annular ring **507**, and wall **509** attached to channel **508**. Wall **509** includes edge **516**, and upon assembly with outer shell **400**, is flush with outer shell **400**.

In a preferred embodiment, headphone padding is wrapped around annular ring **507** and secured in channel **508** for positioning adjacent an ear. In one embodiment, the headphone padding is frictionally engaged with channel **508**. In other embodiments, an adhesive is employed to further secure the headphone padding in channel **508**. Any suitable type of securement means known in the art may employed.

In a preferred embodiment, a pump is wrapped around ring **506** such that ring **506** is inserted into the pump as will be further described below. In this embodiment, the pump engages and is secured adjacent to ring **515**, preferably with an adhesive to form a substantially airtight attachment.

In a preferred embodiment, inner shell **500** is made of plastic. Other suitable materials known in the art may be employed including metals and metal alloys.

Referring to FIGS. **6**A and **6**B, pump **600** includes set of pleats **601**, **602**, and **603**. Pleat **601** includes end surface **604**. End surface **604** includes port **606** having annular surface **605**. Pleat **603** includes end surface **607** opposite end surface **604**. End surface **607** includes port **608** through which air moves.

In preferred embodiment, pump **600** is made from a flexible plastic. Other suitable materials known in the art may be employed.

In use, a connector, as will be further described below, is attached to end surface **604** and to a motor. End surface **607** is attached to an inner shell such that port **608** is secured to a post of an inner shell, preferably with an adhesive, to form a substantially airtight connection between pump **600** and the inner shell. The motor is operated such that pump **600** is compressed and decompressed generally along axis **609** in directions **610** and **611**, respectively. In this way, pump **600** operates similar to that of an accordion and air is forced out of pump **600** via port **608** into a cavity of an inner shell, for example inner shell **500**.

Referring to FIGS. **7**A and **7**B, connector **700** includes annular ring **701**, post **702** attached to annular ring **701**, annular ring **703** attached to post **702** opposite annular ring **701**, and connector plate **704** attached to annular ring **703** opposite post **702**. Connector plate **704** includes receiver **705** for receiving a connector rod. The connector rod is also connected to a shaft of a motor.

In one embodiment, the connector rod is connected to the shaft of a motor with a crank arm. In another embodiment, the connector rod has a set of teeth for engagement with a set of gears, which is engaged with a set of teeth attached to the shaft of the motor. Any suitable means of connection known in the art may be employed.

In a preferred embodiment, connector **700** is a single piece made of plastic. Other suitable means of construction known in the art may be employed including without limitation connector **700** is a set of any number of pieces connected together to form connector **700**. Other suitable materials known in the art may be employed including metals and metal alloys.

Referring to FIGS. **8**A and **8**B, hinge plate **800** includes plate **801**. Plate **801** includes receiver **802**, extension **803** adjacent receiver **802**, and extension **804** adjacent receiver **802** opposite extension **803**. Extension **803** includes bore **805** extending through extension **803**. Extension **804** includes bore **806** extending through extension **804**. Bore **805** and bore **806** are axially aligned for receiving a hinge pin. In a preferred embodiment, hinge plate **800** is made of plastic. Other suitable materials known in the art may be employed including metals and metal alloys.

Referring to FIG. **8**C, hinge plate **850** includes plate **851**. Plate **851** includes extension **852** on side **854**. Extension **852** has bore **853** extending through extension **852**. In a preferred embodiment, extension **852** is generally centrally positioned along side **854**. In this embodiment, extension **852** is complementarily received by receiver **802** and pivotally secured with a hinge pin to form a hinge, which connects each of control earpiece **100** and earpiece **200** to headband **300**.

Referring to FIGS. **9**A and **9**B, outer shell **900** includes sides **901**, **902**, and **903**, each of which is attached to outer surface **906** with transition **907** to form outer shell cavity **908**. Side **903** includes slot **904** for attachment of display **905**. Outer shell **900** provides a housing for a control system to control a pressure as will be further described below.

In a preferred embodiment, outer shell **900** is made of plastic. Other suitable materials known in the art may be employed including metals and metal alloys.

Referring to FIGS. **10**A, **10**B, **10**C, inner shell **202** will be further described as inner shell **1000**. Inner shell **1000** is substantially the same as inner shell **500**. Inner shell **1000** includes sides **1001**, **1002**, and **1003** and inner surface **1017** to form shell cavity **1010**. Platform **1004** includes surface **1014** and forms cavity **1013** opposite surface **1014**. Set of position sensors **1018** is positioned in cavity **1013** and in shell cavity **1010**. Post **1005** is attached to platform **1004** and has hole **1011** that extends through platform **1004** into shell cavity **1010**. Ring **1006** is attached to post **1005** opposite platform **1004**. Ring **1015** is attached to post **1005** and positioned adjacent to ring **1006**. In a preferred embodiment, ring **1015** has a diameter less than a diameter of ring **1006**. Each of sides **1001**, **1002**, and **1003** includes annular ring **1007**, channel **1008** attached to annular ring **1007**, and wall **1009** attached to channel **1008**. Wall **1009** includes edge **1016** and upon assembly with outer shell **900** is flush with outer shell **900**.

In a preferred embodiment, headphone padding is wrapped around annular ring **1007** and secured in channel **1008** for positioning adjacent an ear. In one embodiment the headphone padding is frictionally engaged with channel **1008**. In other embodiments, an adhesive is employed to further secure the headphone padding in channel **1008**. Any suitable type of securement means known in the art may employed.

In a preferred embodiment, a pump is wrapped around ring **1006** such that ring is inserted into the pump in substantially the same manner as that described with respect to inner shell **500**. In this embodiment, the pump engages and is secured adjacent to ring **1015**, preferably with an adhesive to form a substantially airtight attachment.

In a preferred embodiment, inner shell **1000** is made of plastic. Other suitable materials known in the art may be employed including metals and metal alloys.

Referring to FIG. **11**, control system **1100** includes processor **1101**, power switch **1102** connected to processor **1101**, battery **1103** connected to power switch **1102**, USB port **1104** connected to processor **1101**, and memory **1105** connected to processor **1101**. Control system **1100** further includes a set of pressure sensors **1106** connected to processor **1101**, ground mode button **1107** connected to processor **1101**, ascent mode button **1108** connected to processor **1101**, and descent mode button **1109** connected to processor **1101**. Each of left increase pressure button **1110**, left decrease pressure button **1111**, right increase pressure button **1112**, and right decrease pressure button **1113** is connected to processor **1101**. Left display **1114** is connected to processor **1101**. Right display **1115** is connected to processor **1101**. A set of indicator LEDs **1116** is connected to processor **1101**. Set of indicator LEDs **1116** corresponds to low battery LED indicator **414**, pressure warning LED indicator **415**, and device charged LED indicator **416**. Blue LED **1117** is connected to processor **1101**. Green LED **1118** is connected to processor **1101**. Red LED **1119** is connected to processor **1101**. Left motor **1120** is connected to processor **1101**. Left pump **1122** is connected to left motor **1120**. Right motor **1121** is connected to processor **1101**. Right pump **1123** is connected to processor **1101**.

In a preferred embodiment, processor **1101** is a TinyDuino Processor Board. Other suitable processors known in the art may be employed.

In a preferred embodiment, power switch **1102** is a tactile switch button having a diameter of approximately 12 millimeters and a height of approximately 6 millimeters. Other suitable switches or buttons known in the art may be employed.

In a preferred embodiment, battery **1103** is a lithium ion battery having a capacity of approximately 270 mAh. Other suitable batteries known in the art may be employed.

In a preferred embodiment, USB port **1104** is a USB TinyShield port. Other suitable data transfer ports known in the art may be employed.

In a preferred embodiment, memory **1105** is a 64 GB flash memory. Other suitable memory known in the art may be employed.

In a preferred embodiment, each pressure sensor of set of pressure sensors **1106** is a Bosch BMP280 pressure sensor. Other suitable pressure sensors known in the art may be employed.

In a preferred embodiment, each of ground mode button **1107**, ascent mode button **1108**, and descent mode button **1109** is a tactile switch button having a diameter of approximately 12 millimeters and a height of approximately 6 millimeters. Other suitable switches or buttons known in the art may be employed.

In a preferred embodiment, each of left increase pressure button **1110**, left decrease pressure button **1111**, right increase pressure button **1112**, and right decrease pressure button **1113** is a tactile switch button having a diameter of approximately 12 millimeters and a height of approximately 6 millimeters. Other suitable switches or buttons known in the art may be employed.

In a preferred embodiment, each of left display **1114** and right display **1115** is a TinyScreen OLED TinyShield screen. Other suitable displays known in the art may be employed.

In a preferred embodiment, each of set of indicator LEDs **1116** is a diffused 3 millimeter LED of any color. Other suitable LEDs known in the art may be employed.

In a preferred embodiment, blue LED **1117** is a diffused 3 millimeter blue LED. Other suitable LEDs known in the art may be employed.

In a preferred embodiment, green LED **1118** is a diffused 3 millimeter green LED. Other suitable LEDs known in the art may be employed.

In a preferred embodiment, red LED **1119** is a diffused 3 millimeter red LED. Other suitable LEDs known in the art may be employed.

In a preferred embodiment, each of left motor **1120** and right motor **1121** is a brushed DC pager motor (RPM2). In another embodiment, each of left motor **1120** and right motor **1121** is a small reduction stepper motor with 5V DC 32-step 1/16 gearing. Other suitable motors known in the art may be employed.

In a preferred embodiment, each of pumps **1122** and **1123** is pump **600**. Other suitable pumps known in the art may be employed.

In a preferred embodiment, a set of instructions is stored in memory **1105** and executed by processor **1101**. A set of data is further received and stored in memory **1105**, including preset, saved, and detected pressure levels. The set of instructions receives and examines any of a set of input signals from set of pressure sensors **1106**, ground mode button **1107**, ascent mode button **1108**, descent mode button **1109**, left increase pressure button **1110**, left decrease pressure button **1111**, right increase pressure button **1112**, and right decrease pressure button **1113** and executes the set of instruction based any number of the set of input signals to generate a set of output signals that operates any of left display **1114**, right display **1115**, set of indicator LEDs **1116**, blue LED **1117**, green LED **1118**, and red LED **1119**. The set of output signals operate any of left motor **1120** and right motor **1121**, thereby operating any of left pump **1122** and **1123**, respectively.

In a preferred embodiment, the set of instructions is programmed using the Arduino software in C/C++ programming language. In another embodiment, the set of instructions is programmed using the JavaScript programming language. Other suitable programming languages known in the art may be employed.

Referring to FIG. **12**, method **1200** for operating a headset will be described. At step **1201**, power to the headset is turned on. At step **1202**, the headset enters a standby mode awaiting a command. At step **1203**, whether a command is received is determined. A command is an input signal, by way of example, from an ascent mode button to execute an ascent mode as will be further describe below or as another non-limiting example, a signal to increase or decrease pressure on the left or right earpiece. If a command is received at step **1203**, then the command is executed at step **1204**. In a preferred embodiment, each of an increase and decrease command for either the left or right earpiece adjusts the pressure by an increment of approximately 10 hPa. Other suitable pressure increments may be employed. If no command is received at step **1203**, then method **1200** returns to standby mode at step **1202**.

At step **1205**, whether a power off command is received is determined. If not, then method **1200** returns to standby mode at step **1202**. If so, then method **1200** ends and powers off at step **1206**.

Referring to FIG. **13**, method **1300** for implementing a ground pressure mode is described and starts at step **1301**. At step **1302**, a current ambient pressure is determined from a set of pressure sensors. At step **1303**, a predetermined ground pressure is retrieved from memory. In a preferred embodiment, the predetermined ground pressure is set by a user on first use and varies from each geographic location of the user. For example, the ground pressure in Denver, Colo. will be different from the ground pressure in Frisco, Tex. In other embodiments, the predetermined ground pressure is preset. In these embodiments, the predetermined ground pressure is approximately 101.325 kPa, approximately 1 atm.

At step **1304**, the current ambient pressure is compared to the predetermined ground pressure to determine whether the current ambient pressure matches the predetermined ground pressure. In a preferred embodiment, a match is determined when the current ambient range is within a predetermined error or tolerance range of the predetermined ground pressure. Other means for comparing and matching data known in the art may be employed. If no match is determined at step **1304**, then method **1300** proceeds to step **1305**. At step **1305**, a pressure of each earpiece is adjusted by increasing and/or decreasing the pressure in each ear piece by activating each pump motor in each earpiece thereby activating each pump in each earpiece to change the pressure in each earpiece. Method **1300** returns to step **1304**. If a match is determined at step **1304**, then method **1300** proceeds to step **1306** where the pressure adjustment stops. Method **1300** ends at step **1307**.

Referring to FIG. **14**, method **1400** for implementing an ascent pressure on a headset is described and begins at step **1401**. At step **1402**, a current pressure rate in the headset is determined from a set of pressure sensors. At step **1403**, an ambient ascent pressure rate is determined from the set of pressure sensors. At step **1404**, the current pressure rate is compared to the ambient ascent pressure rate to determine whether the current pressure rate matches the ambient ascent pressure rate. In a preferred embodiment, a match is determined when the current pressure rate is within a predetermined error or tolerance range of the ambient ascent pressure rate. Other means for comparing and matching data known in the art may be employed. If no match is determined at step **1404**, then the current pressure rate in the headset is adjusted at step **1405** and then method **1400** returns to step **1404**. If a match is determined at step **1404**, then method **1400** proceeds to step **1406** where the pressure in the headset is adjusted at the current pressure rate in each ear piece by activating each pump motor in each earpiece thereby activating each pump in each earpiece to change the pressure in each earpiece. In this step, the pressure is decreased according to the current pressure rate.

At step **1407**, whether the ambient pressure change has ended is determined from the set of pressure sensors. If not, then method **1400** returns to step **1406**. If so, then method **1400** proceeds to step **1408** where the adjustment of the pressure in the headset is stopped. Method **1400** then ends at step **1409** and returns to a standby mode.

Referring to FIG. **15**, method **1500** for implementing a descent pressure on a headset is described and begins at step **1501**. At step **1502**, a current pressure rate in the headset is determined from a set of pressure sensors. At step **1503**, an ambient descent pressure rate is determined from the set of pressure sensors. At step **1504**, the current pressure rate is compared to the ambient descent pressure rate to determine whether the current pressure rate matches the ambient descent pressure rate. In a preferred embodiment, a match is determined when the current pressure rate is within a predetermined error or tolerance range of the ambient descent pressure rate. Other means for comparing and matching data known in the art may be employed. If no match is determined at step **1504**, then the current pressure rate in the headset is adjusted at step **1505** and then method **1500** returns to step **1504**. If a match is determined at step **1504**, then method **1500** proceeds to step **1506** where the pressure in the headset is adjusted at the current pressure rate in each ear piece by activating each pump motor in each earpiece thereby activating each pump in each earpiece to change the pressure in each earpiece. In this step, the pressure is increased according to the current pressure rate.

At step **1507**, whether the ambient pressure change has ended is determined from the set of pressure sensors. If not, then method **1500** returns to step **1506**. If so, then method **1500** proceeds to step **1508** where the adjustment of the pressure in the headset is stopped. Method **1500** then ends at step **1509** and returns to a standby mode.

Referring to FIG. **16** in another embodiment, headset **1600** includes headband **1601**, control earpiece **1602** movably connected to headband **1601**, and earpiece **1603** movably connected to headband **1601**. Annular pad **1604** is attached to control earpiece **1602** with a suitable adhesive or other suitable attachment means known in the art. Annular pad **1605** is attached to earpiece **1603** with a suitable adhesive or other suitable attachment means known in the art.

Headband **1601** includes connector portions **1606** and **1607**. Connector portion **1606** includes connector **1608** having bore **1609** sized to accommodate wire **1612** of control earpiece **1602**. Connector **1608** is attached connector mount **1610**. Connector portion **1606** further includes opening **1611** sized to accommodate a tab of wire **1612** and to prevent movement of wire **1612** in opening **1611** in a direction generally along bore **1609**.

Connector portion **1607** includes connector **1613** having bore **1614** sized to accommodate wire **1617** of earpiece **1603**. Connector **1613** is attached connector mount **1615**. Connector portion **1607** further includes opening **1616** sized to accommodate a tab of wire **1617** and to prevent movement of wire **1617** in opening **1616** in a direction generally along bore **1614**.

Cable **1618** connects control earpiece **1602** to earpiece **1603** through passage **1620** in headband **1601**. Cable **1618** enables data and power to be sent and received between control earpiece **1602** and earpiece **1603**. Control earpiece **1602** includes power port **1619** and ambient pressure sensor **1621**.

In some embodiments, a pad is attached to headband **1601** to provide comfort for a user.

In a preferred embodiment, headband **1601** is made of a suitable plastic. Other materials known in the art may be employed.

In a preferred embodiment, each of annular pad **1604** and **1605** is made of a suitable foam and covered with a plastic cover such that when in use each of annular pads **1604** and **1605** provides a substantial seal between the cover and the skin of the user. Other suitable materials known in the art may be employed.

In a preferred embodiment, cable **1618** is a USB 3.0 cable. Other suitable data and power cables known in the art may be employed.

Referring to FIG. **17**, control earpiece **1602** includes outer shell **1701** connected to inner shell **1702** with set of fasteners **1703**. Connector **1704** is movably connected to outer shell **1701** with pin **1705**. Connector **1706** is movably connected to outer shell **1701** with pin **1707**. Wire **1612** is slidably engaged with each of connectors **1704** and **1706**. Outer shell **1701** includes display **1709**, left pressure up button **1710**, left pressure down button **1711**, right pressure button **1712**, right pressure down button **1713**, and ground level mode button **1714**. Outer shell **1701** further includes power button **1715**, ascent mode button **1716**, descent mode button **1717**, pressure warning LED indictor **1718**, low battery LED indicator **1719**, and device charged LED indicator **1720**.

Outer shell **1701** includes outer surface **1721**, transition **1722**, annular side **1713**, and annular ring **1724**. Annular ring **1724** includes a set of holes **1725**, each of which is sized to accommodate a corresponding fastener of set of fasteners **1703**. Annular pad **1604** is attached to annular ring **1724** and an annular ring of inner shell **1702**.

In a preferred embodiment, control earpiece **1602** has a generally oval shape and is sized to fit over the ear of a user. Other suitable shapes, sizes, and fits known in the art may be employed, including ear bud styles.

In a preferred embodiment, outer shell **1701** is made of plastic. Other suitable materials known in the art may be employed including metal and metal alloys.

Referring to FIGS. **18** and **19**, control earpiece **1602** further includes board **1801** connected to surface **1721** and battery **1802** switchably connected to board **1801** and connected to inner shell **1702**. Set of pressure sensors **1807** is attached to the inside of inner shell **1702** and connected to board **1801**. Motor **1803** includes shaft **1806** and is operably connected to board **1801**. Crank arm **1804** is rotatably connected to shaft **1806** of motor **1803** and connector rod **1805** is rotatably connected to crank arm **1804**. Connector **700** is rotatably connected to connector rod **1805** and connected to pump **600**. Pump **600** is connected to inner shell **1702**. Cable **1618** is connected to board **1801**.

In use, board **1801** controllably provides power from battery **1802** to motor **1803**. Motor **1803** rotates shaft **1806**, and through crank arm **1804**, connector rod **1805** and connector **700** moves pump **600** back and forth generally along directions **1901** and **1902** to provide air pressure in inner shell **1702** which is immediately adjacent to an ear of a user. Board **1801** further provides power and data and receives data through cable **1618**. Cable **1618** is connected to earpiece **1603**. Set of pressure sensors **1807** provides data to board **1801**.

In a preferred embodiment, board **1801** is a PCB board and includes components such as processor **1101** and memory **1105**. In a preferred embodiment, one or more of USB ports **1104** is connected to board **1801**. In this embodiment, cable **1618** is connected to a first USB port **1104** and power port **1619** is a second USB port **1104**. Other suitable arrangements known in the art may be employed.

Referring to FIGS. **20**A and **20**B, inner shell **1702** includes platform **2001** and annular side **2003** to form shell cavity **2010**. Annular ring **2004** is attached to annular side **2003**. Set of holes **2009** is integrally formed into annular ring **2004** and sized to receive a set of fasteners. Platform **2001** includes surface **2002** and forms cavity **2010** opposite surface **2002**. Post **2007** is attached to platform **2001** and has hole **2006** that extends through platform **2001** into cavity **2010**. Ring **2008** is attached to post **2007** opposite platform **2002**.

In a preferred embodiment, ring **2008** has a diameter greater than a diameter of post **2007**.

In a preferred embodiment, pump **600** is wrapped around ring **2008** such that ring **2008** is inserted into pump **600** as shown in FIGS. **19** and **25**. In this embodiment, pump **600** engages and is secured adjacent to platform **2002**, preferably with an adhesive to form a substantially airtight attachment.

In a preferred embodiment, inner shell **1702** is made of plastic. Other suitable materials known in the art may be employed including metals and metal alloys.

Referring to FIGS. **21**A and **21**B, each of connectors **1704** and **1706** will be further described as connector **2100**. Connector **2100** includes mounting portion **2101** and housing **2102**. Mounting portion **2101** includes bore **2103** which is sized to accommodate a peg for rotatable connection and support **2106**. Housing **2102** includes cavity **2104** and hole **2105**. In a preferred embodiment, hole **2105** has a diameter less than a diameter of cavity **2104** to form an annular shoulder in cavity **2104**. In this way, a wire of an earpiece or a control earpiece moves generally along directions **2107** and **2108** without removal from connector **2100**.

In a preferred embodiment, connector **2100** is made of plastic. Other suitable materials known in the art may be employed including metals and metal alloys.

Referring to FIG. **22**, each of wires **1612** and **1617** will be further described as wire **2200**. Wire **2200** includes connector portions **2201** and **2203** and headband portion **2202**. Connector portion **2201** has shoulder **2205**. Connector portion **2203** has shoulder **2206**. Headband portion **2202** has tab **2204** integrally formed therein.

In a preferred embodiment, wire **2200** is made of an 8 gauge metal wire. Other suitable materials and sizes, including plastics may be employed.

Referring to FIG. **23**, earpiece **1603** includes outer shell **2301** connected to inner shell **1702** with set of fasteners **2307**. Each of connectors **2100** is movably connected to outer shell **2301** with pin **2308** and slidably engaged with wire **1617**. Outer shell **2301** includes outer surface **2302**, transition **2303**, annular side **2304**, and annular ring **2305**. Annular ring **2305** includes a set of holes **2309**, each of which is sized to accommodate a corresponding fastener of set of fasteners **2307**. Annular pad **1605** is attached to annular ring **2305** and an annular ring of inner shell **1702**.

In a preferred embodiment, earpiece **1603** has a generally oval shape and is sized to fit over the ear of a user. Other suitable shapes, sizes, and fits known in the art may be employed, including ear bud styles.

In a preferred embodiment, outer shell **2301** is made of plastic. Other suitable materials known in the art may be employed including metal and metal alloys.

Referring to FIGS. **24** and **25**, earpiece **1603** further includes motor **2401** connected to cable **1618** and mounted to inner shell **1702**. Motor **2401** includes shaft **2404**, which is rotatably connected to crank arm **2402**. Connector rod **2403** is rotatably connected to crank arm **2402**. Connector **700** is rotatably connected to connector rod **2403** and connected to pump **600**. Pump **600** is connected to inner shell **1702**. Set of pressure sensors **2405** is attached to the inside of inner shell **1702** and connected to cable **1618**. Cable **1618** is connected to board **1801** of control earpiece **1602**.

In use, board **1801** of control earpiece **1602** controllably provides power from battery **1802** to motor **2401**. Motor **2401** rotates shaft **2404** and, through crank arm **2402**, connector rod **2403**, and connector **700**, moves pump **600** back and forth generally along directions **2406** and **2407** to provide air pressure in inner shell **1702** which is immediately adjacent to an ear of a user. Board **1801** further provides and receives data through cable **1618** connected to earpiece **1603**. Set of pressure sensors **2405** provides data to board **1801** through cable **1618**.

It will be appreciated by those skilled in the art that any number of connection arrangements known in the art may be employed to connect, directly or indirectly, each of motor **2401** and set of pressure sensors **2405** to cable **1618**, including without limitation cable connectors, hubs, and adaptors.

It will be appreciated by those skilled in the art that control earpiece **1602** and earpiece **1603** may be worn on either the right or left ear of a user. In a preferred embodiment, control earpiece **1602** is worn on the right ear of the user. In this embodiment, earpiece **1603** is worn on the left ear of the user. In another embodiment, control earpiece **1602** is worn on the left ear of the user. In this embodiment, earpiece **1603** is worn on the right ear of the user. In other embodiments, earpiece **1603** is substituted by control earpiece **1602**, which is worn on each of the left ear and right ear of the user such that each control earpiece **1602** controls the pressure in the ear on which the respective control earpiece **1602** is worn.

It will be appreciated by those skilled in the art that the embodiments disclosed in FIGS. **1**-**10**C and in FIGS. **16**-**25** each employ the hardware and software components, arrangements, and functionality disclosed in FIGS. **11**-**15**. It will be further appreciated by those skilled in the art that the embodiments disclosed in FIGS. **1**-**10**C employ the power, data, motor, and pump arrangements employed in FIGS. **16**-**25**.

It will be appreciated by those skilled in the art that modifications can be made to the embodiments disclosed and remain within the inventive concept. Therefore, this invention is not limited to the specific embodiments disclosed, but is intended to cover changes within the scope and spirit of the claims.

The invention claimed is:

**1**. A headset for adjusting air pressure, comprising:

a headband;

a first earpiece connected to the headband;

a second earpiece connected to the headband;

a first control system connected to the first earpiece;

a pump system connected to the first earpiece, to the second earpiece, and to the control system;

a first cavity of the first earpiece having a first adjustable air pressure;

a second cavity of the second earpiece having a second adjustable air pressure;

wherein the first control system comprises:

a processor;

a battery controllably connected to the processor;

a memory connected to the processor;

a USB port connected to the processor;

a first set of pressure sensors connected to the processor;
a second set of pressure sensors connected to the processor;
a set of pressure mode buttons connected to the processor;
a first set of pressure control buttons connected to the processor;
a second set of pressure control buttons connected to the processor;
a set of displays connected to the processor; and,
a set of indicator LEDs connected to the processor.

**2**. The headset of claim **1**, further comprising a second control system connected to the second earpiece and to the pump system.

**3**. The headset of claim **1**, wherein the first earpiece comprises:
a first outer shell;
a first inner shell connected to the first outer shell; and,
a first pad connected to the first inner shell.

**4**. The headset of claim **3**, wherein the second earpiece comprises:
a second outer shell;
a second inner shell connected to the second outer shell; and,
a second pad connected to the second inner shell.

**5**. The headset of claim **1**, wherein the pump system further comprises:
a first motor connected to the processor;
a first pump movably connected to the first motor;
a second motor connected to the processor; and,
a second pump movably connected to the second motor.

* * * * *